IRON TRADE REVIEW AND WESTERN MACHINIST

A JOURNAL OF MANUFACTURES, HARDWARE, METALLURGY AND INVENTION.

VOLUME XVIII. CLEVELAND, O., FEBRUARY 14, 1885. NUMBER 7.

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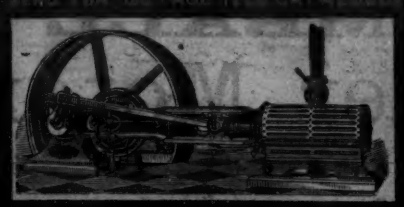

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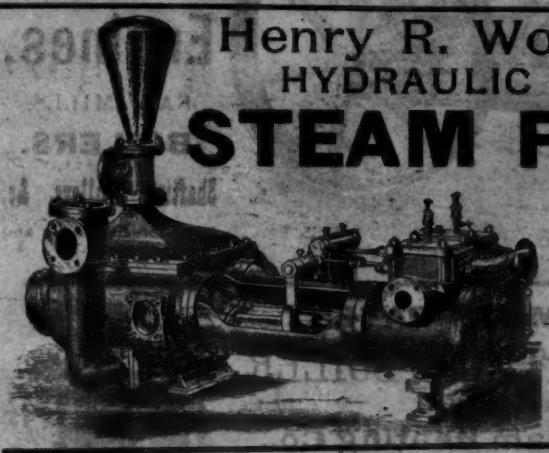

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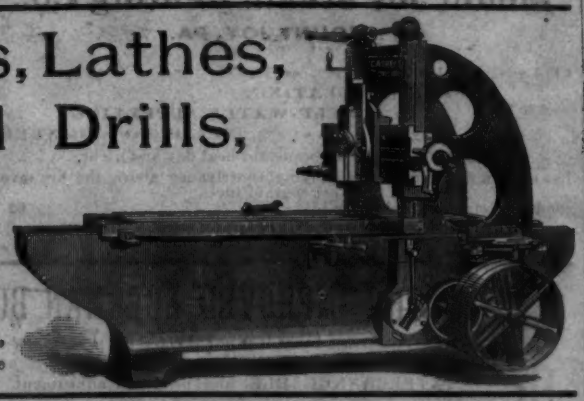

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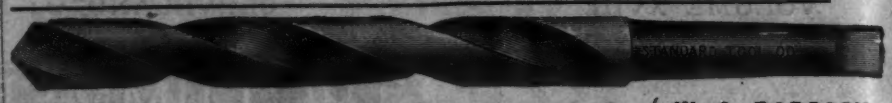

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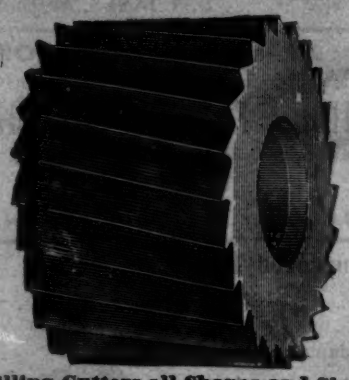

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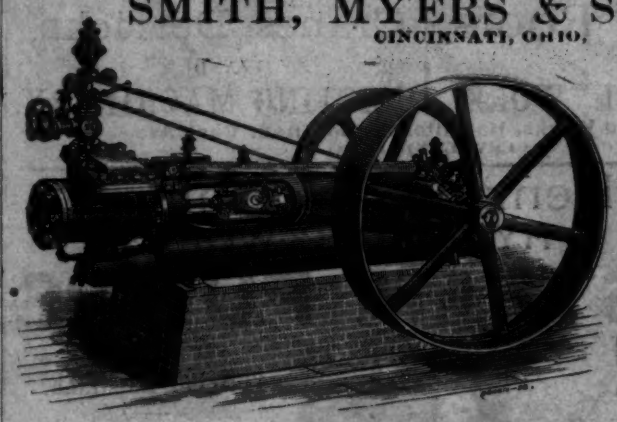

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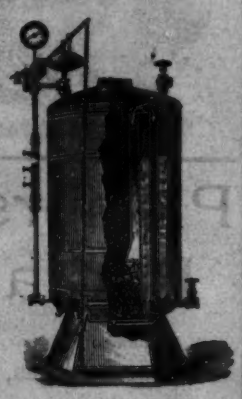

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The oxygen and hydrogen supplying contrivance above the fire saves 35 per cent. of fuel.
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IRON TRADE REVIEW AND WESTERN MACHINIST

VOLUME XVIII. CLEVELAND, O., FEBRUARY 14, 1885. NUMBER 7.

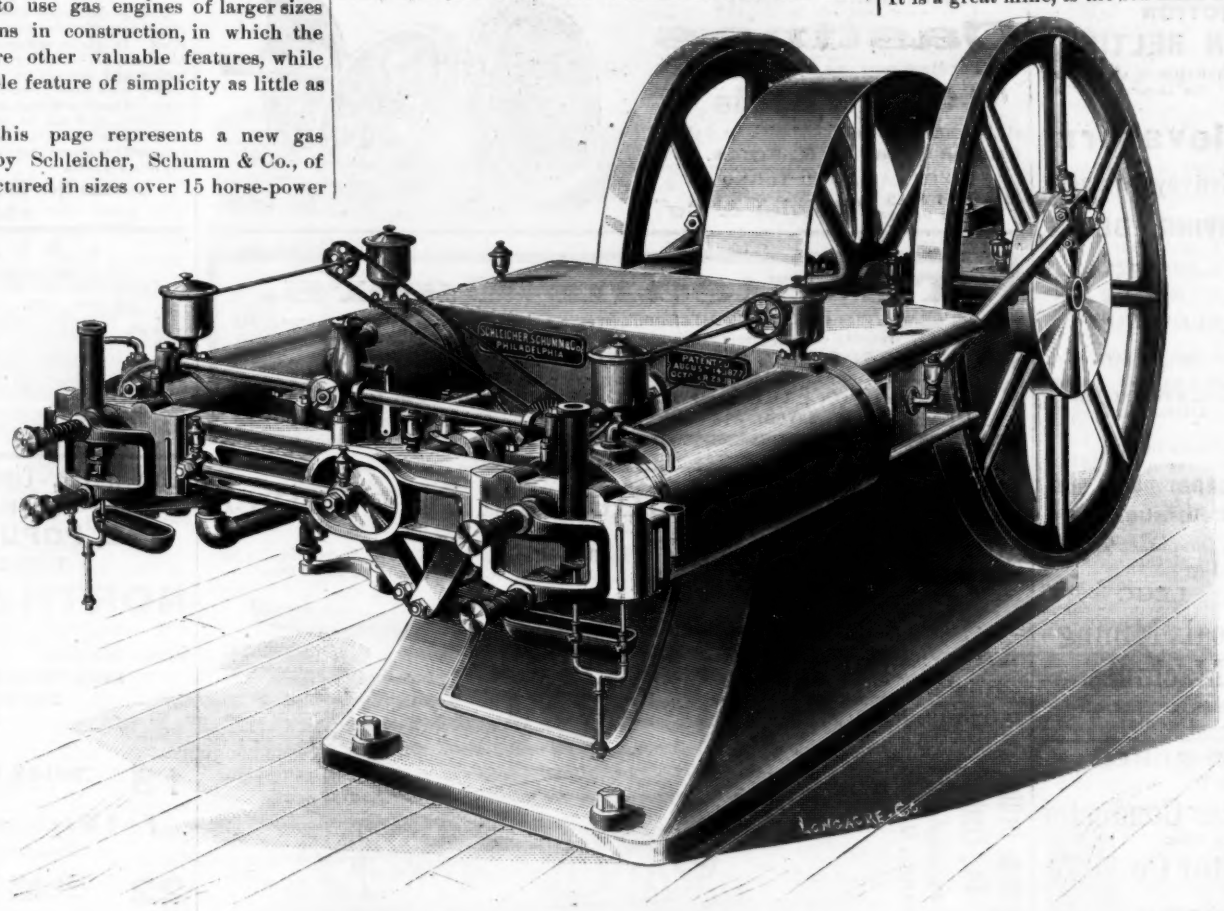
NEW MACHINERY.

THE "OTTO" TWO-CYLINDER GAS ENGINE.

For the ordinary purposes for which gas engines are used—developing but a few horse-power—the single-cylinder engine, from its simplicity and the ease with which it can be managed by unskilled attendants, is found to be very satisfactory; but in localities where gas is furnished at moderate prices, as in England and other European countries, the tendency is to the use of larger gas engines—those of 100 horse-power being sometimes used. This tendency to use gas engines of larger sizes has led to modifications in construction, in which the aim has been to secure other valuable features, while sacrificing the desirable feature of simplicity as little as possible.

The engraving on this page represents a new gas engine brought out by Schleicher, Schumm & Co., of Philadelphia, manufactured in sizes over 15 horse-power only. In this engine an impulse is given at every revolution of the fly-wheel when running at full power, which gives a steady motion. Special advantages are also claimed for it when partly loaded.

The governor controls the speed by admitting gas to one cylinder alone until the full power of that cylinder is exerted, after which, for further power, the second cylinder begins its work. The arrangement is such that while the right-hand cylinder draws in a charge, the left-hand cylinder is doing work, and while the left-hand cylinder exhausts combustion gases, the right-hand cylinder compresses the charge for the subsequent ignition. With both cylinders the action of the governor is such as to prevent undue and subsequent increase of speed, because there is no charge to be admitted to the cylinder and exploded after the governor has cut off the supply, as is the case with engines having a separate pump.



"OTTO" TWO-CYLINDER GAS ENGINE.

The combination of two standard "Ottos" under control of one governor secures the same economy in gas consumption as in the other form of these engines, and provides for regularity of motion under full or partial load, and freedom from destructive jars and shocks. We are informed that in a test of one of these engines rated at 25 indicated horse-power, it was worked up to 30 horse-power, developing 24 horse-power on the brake. The consumption of gas is guaranteed to be less than 21½ feet per indicated horse-power per hour. As previously noted, these engines are not built double except in larger sizes; but where considerable power is required, this combination is recommended as giving more satisfactory results than a single engine, while there is but little complication of parts to bring about desired results.

PRODUCTION OF PIG IRON IN 1884.

Bulletin of the American Iron & Steel Association.

By making free use of the mails and the telegraph we are enabled to give this week *in round numbers* the production of pig iron in the United States in 1884 and the unsold stocks at the close of the year. The details will be given next week.

Our production of pig iron in 1884 was 4,585,000 net tons, against 5,146,972 tons in 1883, 5,178,122 tons in 1882, 4,641,564 tons in 1881, and 4,295,414 tons in 1880. The production of 1884 was 290,000 tons more than in the boom year 1880 and nearly as much as in 1881. Of the production in 1884 there were produced with anthracite coal, or with mixed anthracite and bituminous coke, 1,586,000 tons; with bituminous coal and coke, 2,541,000 tons; and with charcoal, 458,000 tons. The shrinkage in 1884 as compared with 1883 was most marked in the anthracite districts.

The stocks of pig iron on hand and unsold at the close of 1884 amounted to 591,000 net tons, against 533,800 tons at the close of 1883, 429,694 tons at the close of 1882, 210,896 tons at the close of 1881, and 456,658 tons at the close of 1880. Of the stocks at the close of 1884 there were produced with anthracite, or with mixed anthracite and coke, 179,000 tons; with bituminous coal and coke, 191,000 tons; and with charcoal, 221,000 tons.

The number of furnaces in blast at the close of 1884 was 235, against 307 at the close of 1883, and 417 at the close of 1882. This is in one sense a healthy exhibit, as it indicates that stocks will now be decreased rather than increased. We made a little too much pig iron in 1884.

THE total quantity of Spanish ore shipped from Bilbao last year was 3,197,422 tons, the figures for preceding years being—1883, 3,428,187 tons; in 1882, 3,737,176 tons; 1881, 2,550,549 tons; 1880, 2,390,732 tons.

The Greatest Iron Mine in the Union.

Ishpeming Iron Agitator.

Recent discoveries in the Lake Superior hematite mine with the diamond drill have revealed a body of ore, the extent of which can only be understood by a personal inspection of the property. We doubt if it can be equalled even by the great Chapin, and yet the company says but very little of it. In point of quality the ore is identical with that in the main workings of the mine, it being truly a continuation of the same vein as found there, but at a point several hundred feet further to the south-east. Crossing the formation, several holes have been put in, showing a width of from 200 to 500 feet. The ore, a hard hematite, can be easily worked, not requiring that attention in timbering needed in softer ores. It is a great mine, is the old Lake Superior, and it would seem that its 26 years of constant working was merely to prepare the way to the real nuggets—the lifting of the coffer lids, as it were. We look upon it as the greatest mine that there is to-day in the Union, and believe it can send out more ore, hard and soft, than any competitor.

Railroad Notes.

MR. C. T. JOHNS has been appointed General Master Mechanic and Master Car Builder of the Valley Railway.

MR. J. M. FERRIS has resigned as General Manager of the N. Y., P. & O. Railroad and has been succeeded by Mr. Charles Paine, formerly of the Lake Shore Road. Mr A. E. Clark, the efficient General Passenger Agent, is retained in his position.

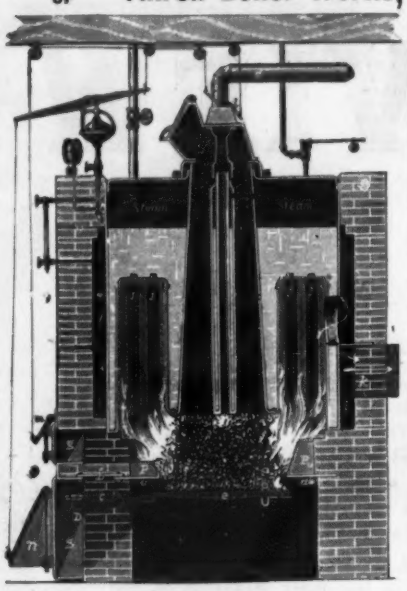
Sinking Large Iron Foundation Cylinders.

Messrs. Anderson & Barr, the contractors for sinking the pneumatic tubes at the Chestnut street bridge in Philadelphia, have closed a contract with the Government for sinking the foundation cylinder for the Fourteen-Foot Bank Light-house in Delaware Bay, by the pneumatic process. The cylinder is to be 35 ft. in diameter and 70 ft. high, resting on a wooden caisson at the base. The cylinder will stand 17 ft. above the water, which latter is 20 ft. deep, so that the penetration into the ground is to be 33 ft. The work is to be completed by Sept. 1, 1885.

Removing Incrustations from Boilers.

Electricity is being advantageously applied in Calais, France, for removing the incrustations from boilers. The two poles of a battery of ten or twelve Bunsen elements are applied to the ends of the boilers and after 30 or 40 hours the deposits fall from the sides to the bottom. When a boiler has been thus cleared the formation of new deposits may be prevented by applying a much less energetic current under the same conditions.

J. C. McNEIL
PROPRIETOR OF **Akron Boiler Works,**



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Elevators,

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DRIVING BELTS,

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will not slip or clog.

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Also manufacturers of the

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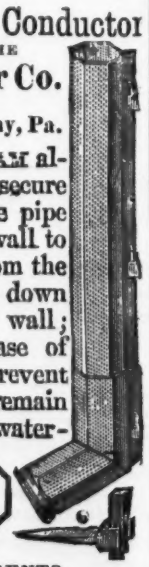

THE STANDING SEAM allows of an easy and secure fastening, keeping the pipe far enough from the wall to make any overflow from the eave pipe or head, run down the spout, and not the wall; and will open, in case of freezing, so as to prevent bursting, and still remain double-locked and water-tight.

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Blooms, Ingots, Muck-Bar, Car Wheels, Rails, Machinery, Nails, etc. We also arrange to store **PIG IRON** at furnaces; **LUMBER** at mills or in yards; **ORE** on docks or at mines. Warrants will be issued on all stock received, made transferable by endorsement and deliverable to the holder on demand. These warrants will furnish a convenient medium of transfer and delivery, and serve as collateral to parties wishing advances on their stock. Correspondence solicited.

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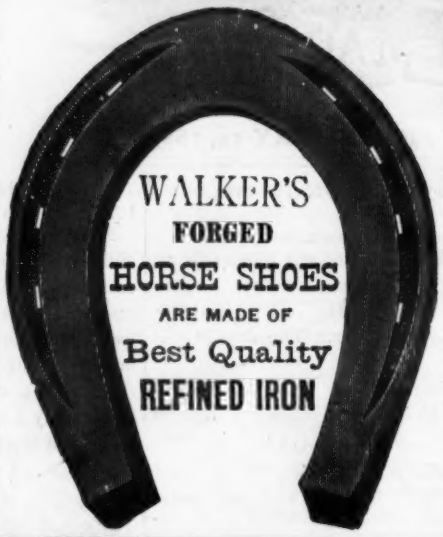

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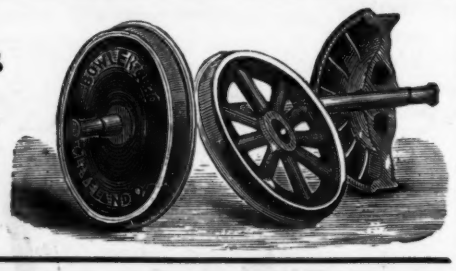

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I will REMOVE and PREVENT SCALE in any STEAM BOILER, or make no charge. My remedy will also neutralize the most destructive waters and prevent

GROOVING, PITTING AND WASTING OF IRON,

Which causes so many boiler explosions.

A BOOK ON CARE AND MANAGEMENT OF STEAM BOILERS.

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Water Wells,
Test Wells,
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Gas Wells.

Drills 6 to 8 in. hole, 40 to 50 ft. per day in hard rock. **Capacity 100 to 1000 feet.**

Send for Illustrated Catalogue, giving Testimonials, Prices, &c.

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IMPROVED "CLIMAX" REVERSIBLE ICE CREEPER.

PATENTED APRIL 30, 1878.

"A" represents the Creeper in position ready for use. The dotted line "B" shows the Creeper thrown back entirely out of the way when not in use, or when walking indoors.

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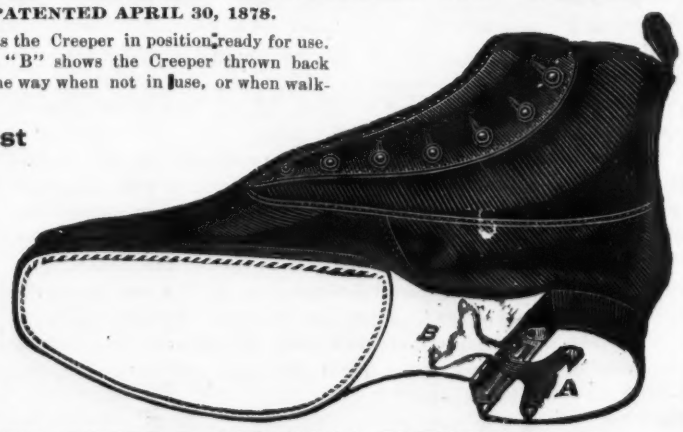

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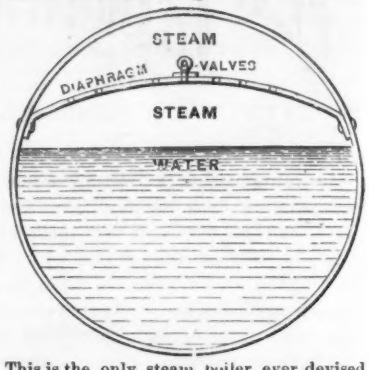

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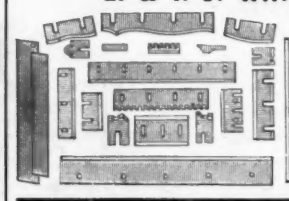

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IRON TRADE TOPICS ABROAD.

TECHNICAL, INDUSTRIAL AND GENERAL.

Cement from Waste Lime—Compressed-Air Power —New Uses for Steel.

Special Correspondence of the IRON TRADE REVIEW.

MANCHESTER, Eng., January 29.—The manufacture of cement from refuse slag of the blast furnace and lime is well known. But Mr. Ransome, who has devoted much attention to the subject and is the inventor of the cement called by his name, has discovered that he can utilize the spent lime from gas works and obtain equally good results as those obtained with specially prepared lime. The difficulty with which he had to contend in using spent lime was how to get rid of the sulphur from the gas lime. He states that he mixes a certain proportion of powdered coal or coke with the slag and lime, and heats the compound in the calcining furnace. The action of the furnace converts the sulphate into a sulphide of lime. He then ejects this sulphide by means of a jet of steam which purifies the lime by the expulsion of all the sulphur impurities as sulphuretted hydrogen.

Mr. Ransome has also invented a process to obviate the cost of grinding. This is done by using a revolving retort for calcining the slag and lime. By this means, after the compound has been thoroughly burnt, it remains in the same granulated state as when placed in the retort, and will pass through a sieve with small meshes, 80 to the inch. Users speak in high terms of the high qualities of cement thus prepared.

COMPRESSED AIR-POWER.

The attention of the users of machinery has been aroused on the subject of compressed air-power by a movement set on foot at Birmingham for supplying compressed air by means of mains from a common centre, and distributing it throughout the town in the same way as is done with gas and water. A company has been formed under the style of the Compressed Air-Power Company who brought their scheme before the public at a meeting held in the Midland Institute. The manufacturers present, more especially those using a limited amount of power—and this class is very numerous in Birmingham—generally approved of the undertaking. The Town Council has asked for the opinion of Mr. H. J. T. Piercy, the eminent mechanical engineer, and I will give you the substance thereof. It is scarcely necessary to say that the object of the company is to supply power at a cheaper rate than by the use of the ordinary steam engines and boilers in use at Birmingham, with these results: [The tabulated results appeared in the IRON TRADE REVIEW of January 24.—ED.] The company asserts that it can supply compressed air by meter at a cost of £8 per annum per indicated horse-power, which would be a saving in seven out of the eight cases above cited.

It was the general opinion of the meeting referred to that as soon as the compressed air is available for use the owners of steam engines will be able to reduce their working expenses for fuel, water, and engine drivers' wages, in addition to the advantages of freedom from boiler explosions and the dirt arising from the use of coal. Messrs. Martineau & Smith, of Birmingham, write: "We may fully expect to see an immense development of small industries within the area commanded by the company's mains; and very important social results are likely to ensue in those trades which at present are crowded together in factories simply to share mill power." A considerable portion of the trade in Birmingham is carried on in large mills by men who have small workshops a few feet square, the owner of the mill simply supplying the workmen with space and power, but having no connection whatever with the work done.

SHOP VENTILATION.

After years of experiment there is still no cessation in the production of new designs for ventilation. Probably the last new thing is the invention of an automatic ventilator by Herbertson, of London. According to the specification the construction is very simple, consisting of a vacuum chamber formed with a series of vertical or horizontal angular plates with a broad edge or lip, presenting the convex surface to the atmosphere. Thus the wind, from whatever quarter it may blow, is guided between the curved and angular plates to the air beyond, causing in its passage a partial vacuum in the extraction shaft. The vitiated air immediately rushes up the shaft to supply the place of that withdrawn, which is in turn expelled, causing a continual discharge of the foul air, without a down-draught.

STEEL MINE-PROPS.

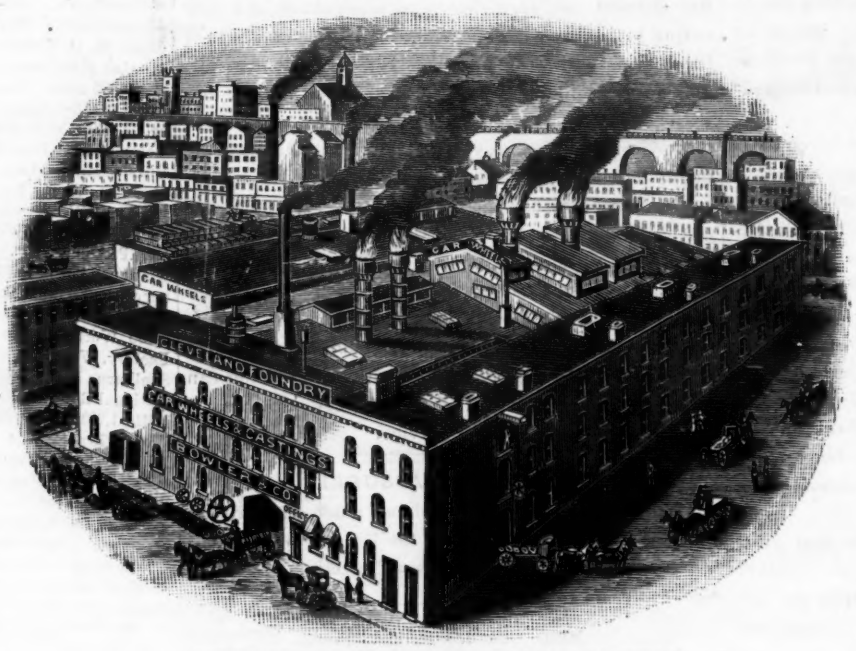
The Darlington Steel & Iron Company have received orders for large sections of channel steel which are intended to take the place of wood in roof beams in pit workings. They are also making steel props for supporting the roofs. This is a novel and unexpected use of steel, and if it becomes general will lead to a large demand upon steelmakers. At first sight the difference in cost between wood and steel would make the use of the latter prohibitive, but it will be in the continuous use of the same material that the gain will be effected. Wood bearings cannot be removed without damage, and the yearly outlay of a large colliery for timber amounts up to a big sum; whereas the first outlay for steel is the greatest, and only a small sum will be required for removals. Then steel has another advantage over wood inasmuch as it occupies less space and a better working headway is secured. The results of the experiment will be interesting.

NEW HYDRAULIC MACHINERY.

I do not know whether the readers of the IRON TRADE REVIEW are interested in mining machinery; if not, you must tell me and in future letters I will avoid mentioning the subject. Some magnificent hydraulic machinery has just been shipped for Marseilles by Messrs. Hathorne, Davey & Co., of the Sun Foundry, Leeds. It consists of a plant for draining a colliery where the ordinary conditions of pumping are not available through the colliery during the wet season, being subject to inundations so that the machinery would at that time be under water. The plan adopted by Messrs. Hathorne is to pump out the water by means of hydraulic engines in the workings actuated under a system of hydraulic transmission from steam engines on the surface. The hydraulic pumping engines below can be started or stopped in the engine house above. The surface engine is of the compound type and of 150 horse-power, which is transmitted to two large hydraulic pumping engines at the bottom of the mine employed in pumping water between 4,000 and 5,000′. The surface engine is provided with a steam accumulator instead of the ordinary weighted one.

CASTING STEEL INGOTS.

I have before me an account of an improvement made by Mr. Ellis, of Rotterdam, in the method of casting ingots of steel, brought about by his discovery that feeders of fire-clay or other suitable non-conducting material do not retain the metal in the molten condition sufficiently long to completely fill up the hollows in the cooling ingots. His new plan is to adapt and apply a feeder, inserted in the top of the mould, which it enters for a short distance, and extends above into a heating flue or furnace, by which it is surrounded, so as to be heated in a temperature sufficiently high to keep the steel in a molten state, the flue or furnace being heated to the required temperature by means of coal or coke fires, or by gas, or other suitable agent for maintaining and communicating the heat as required.



BIRD'S-EYE VIEW OF BOWLER & CO'S FOUNDRY.

OUR BOOK AND EXCHANGE TABLE.

THE *Cincinnati Artisan* has shown much improvement of late.

FEBRUARY *Wide Awake* is a veritable valentine for the young folks.

WE congratulate the *Western Manufacturer*, Chicago, on the attainment of its 13th year.

RUMSEY & Co., Seneca Falls, N. Y., favor us with their neat paper, *Our Fire Apparatus*.

E. P. ROE begins a new serial in February *St. Nicholas* and Gail Hamilton writes of "English Kings in a Nutshell." The illustrations and stories are rich and abundant.

THE *Ironmonger*, 419 Broadway, New York a, new venture, is neat, unique and funny. The portrait and sketch of Andrew Carnegie, in the second number, are a decided hit.

THE Philadelphia *Record* is especially valuable to iron men because of the close attention it pays to labor and technical matters east of the Alleghenies. It is a welcome daily visitor to our table.

THE Distribution of Animals and Plants. By A. Russel Wallace and W. J. Thiselton Dyer. Price 15 cents. J. Fitzgerald, Publisher, 20 Lafayette Place, New York. This work forms No. 64 of the popular "Library of Science."

THE *American Artisan*, Chicago, is entitled to much credit for its notable enterprise in presenting to the National Association of Stove Manufacturers, at the recent meeting, a very artistic and comprehensive Guide to Chicago, for a copy of which we tender to Mr. Daniel Stern, the publisher, due acknowledgments.

THE *North American Review*, always on the alert for leading writers on timely topics, numbers the following as among its February contributors: Henry Ward Beecher (on Preachers in Politics), Senators Dawes and Vance, President Barnard of Columbia College, Roger A. Pryor and George Bancroft.

THE *Century's* war series has proven an immense success. Of the February number (containing Gen. Grant's story of the Battle of Shiloh) an edition of 180,000 was exhausted and an additional 20,000 has been printed. Other features of this number are Mr. Howells's "Florentine Mosaic" and Mark Twain's "Royalty on the Mississippi." The *Century* is a marvel of literary enterprise.

BOWLER & CO.S' CLEVELAND FOUNDRY.

Messrs. Bowler & Co., whose works, the Cleveland Foundry, are herewith illustrated, have been established in Cleveland since 1863. Formerly the firm was known as Bowler, Maher & Brayton. In 1880 Messrs. Maher and Brayton withdrew from the firm. Bowler & Co. have been very successful in business. Their specialties are car wheels, but they are prepared to do any kind of rolling mill and machinery castings. Chilled rolls are also a specialty with this firm. When running full they employ about 125 hands. They have three heavy cupolas, the daily capacity of which is about 150 tons. Their products are shipped all over the country. At the present time business is slack; they are running full time but with a reduced force. The outlook is fair for a good season's trade.

GROWTH OF THE N. A. OF ENGINEERS.

To the Editor of the IRON TRADE REVIEW:

I have issued the following charters since last statement: Paterson No. 2, New Jersey, 15 charter members; Syracuse No. 2, New York, 45 charter members; Artisan No. 6, New York city, 21 charter members; James Watts No. 7, New York city, 46 charter members; Newark No. 3, New Jersey, 125 charter members. We have under investigation 19 applications for charters, most of them in Southern and Western States. We are rapidly gaining in members and influence, for one reason: the steam users find it pays to employ our members; they secure the aggregated skill and experience of the members of the Association to which their engineer belongs. Very truly yours, GEO. G. MINOR,

Secretary National Association of Engineers.

CINCINNATI, January 30, 1885.

IRON TRADE REVIEW AND WESTERN MACHINIST

A JOURNAL OF
MANUFACTURES, HARDWARE, METALLURGY, INVENTION
PUBLISHED WEEKLY BY
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122 *Water Street, Cleveland, O.*

WILSON M. DAY, EDITOR. FRANK N. CARTER, BUSINESS MANAGER.

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Western Machinist (monthly) 60c. a year.
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CLEVELAND, O., FEBRUARY 14, 1885.

THE STOVE MEN IN COUNCIL.

All accounts agree that the annual meeting of the National Association of Stove Manufacturers, held at the Palmer House, Chicago, February 4 and 5, was a most gratifying success. The various sections of the country were well represented, not less than 118 leading gentlemen in the trade being in attendance. The annual address of President Sard, an advance copy of which we have before us, was an eminently business-like document, as might be expected.

Congratulating the members upon the progressive business methods which have been the outgrowth of the Association, he predicted that if the succeeding fifteen years show as great changes in the business of manufacturing and selling stoves as have been seen in the last fifteen years, the men who are at the front in the year 1900 will, and must be, men of unusual capacity for organization and administration. In every department there will then be found men who are experts both in theory and practice, and the conditions of success will be energy and industry combined with superior mental acquirements and intellectual training. In the bringing about of this result, technical mechanical schools will play an important part.

After a review of the stove trade of the past year, which was unsatisfactory and uncertain, the speaker nevertheless congratulated the association upon the fact that no body of manufacturers to-day are sounder and stronger than the stove manufacturers, and that at no previous time in the history of the Association have the members been in such excellent condition as to the proportionate relations of their assets to their liabilities. There was not a single failure among stove men the past year. Another gratifying fact is that during 1884, more than in any previous year, there was an absence of reckless manufacturing beyond the probable requirements of trade, as well as of cutting prices and extending credits. The first named policy has resulted in a considerable curtailment of the excessive stocks in the hands of manufacturers a year ago. The introduction of Southern iron into Northern markets is regarded as a significant feature of the year, resulting in the reduction of the price of No. 1 foundry at tide-water to $18. Other points of much interest and value were brought out, but lack of space precludes further summary.

Interesting discussions were had on the reports of the committees on cost, on trades unions, on the apprentice system and on prices. By the adoption of these reports, more strict regulations as to credits were instituted; more definite provision as to apprentices was made, and and the scale of prices of 1884 was continued. Hereafter not less than 20 per cent. of the floors will be occupied by apprentices. The apprenticeship is to be divided into three periods, of from one year to sixteen months, to three or four years, and the remuneration is to be (perhaps varying somewhat according to the circumstances of localties) 60 per cent. of journeymen's wages the first year, 70 per cent. the second year, and 80 per cent. the third year. The apprentice system was declared to be intended, not for the purpose of lessening the cost of moulding, but to obtain better work and more skillful workmen. The committee, therefore, suggested the payment at the end of each year, to the apprentices of 5 per cent. of their salary, additional to their wages as a present or gift.

THE PIG IRON SURPLUS.

Although the United States consumed 3,996,613 tons (or nearly all) of its gross production of pig iron in 1884—truly a remarkable showing in view of the low state of the iron trade—the total stocks of all kinds of pig iron on hand and unsold at the close of the year were 60,000 tons larger than those at the close of 1883 and 163,306 tons larger than those at the close of 1882. In other words, we have been slowly but steadily piling up pig iron, in the face of the fact that prices are abnormally low and that the production of less than one-half of the furnaces is amply sufficient for the present needs of the country. The only thing, apparently, that saved the iron-makers from disaster the past year was the unexpectedly large consumption. Whether this can be depended on, under like conditions, for another year, is difficult to conjecture.

It is true that our production for 1884 showed a decrease over the preceding year of 557,359 tons, or 11 per cent.; and were it left to the old established districts to regulate the market by a proper amount of restriction, it is quite likely that the surplus at the end of 1884 would have been materially reduced. But meanwhile new districts are springing into importance, and their output is, in some degree, upsetting the calculations of the best posted. For instance, Illinois, Alabama, Virginia, Wisconsin and Texas last year added 732,670 tons to the country's total, an aggregate increase of 115,367 tons over their previous year's production, Illinois alone increasing her production 38 per cent.

The simple fact seems to be that we are each year getting down closer to the point where the relations between supply and demand, being more generally known and appreciated, are more nicely balanced and adjusted to the ever-varying conditions of trade. In the work of obtaining and supplying the information necessary to a full understanding of the situation the American Iron & Steel Association, through its efficient Secretary, is performing an invaluable service.

PROTECTION ASSURED.

The *American Machinist* has shown much enterprise in securing letters from 91 out of the 138 new members of Congress regarding their views on Protection. We thus analyse the results:

	No. new Mem.	Replies Rec'd.	For Protection.	Against Protec.	Total Protection vote.
Republicans....	65	53	53	...	65
Democrats.....	73	38	12	26	12
Total.....	138	91	65	26	77

Adding two Pennsylvania Representatives to be elected, the new Congresss will stand:

New members for Protection	79
Re-elected members for Protection	88
Total	167

As the whole number of members in the House is 325, a majority of nine for Protection is already assured, and the majority may be much larger.

This showing is most important and should have an immediate stimulating effect upon business. Many manufacturers and consumers are holding off in uncertainty as to the probable course ot the next Adminstration, and not a few have been virtually conceding the next House to the Tariff Reformers so-called. That the advocates of Protection still hold the supremacy beyond a doubt is a fact that cannot be too soon or too widely spread before the country. We believe it will have a re-assuring effect at once, and that the restoration of confidence, so long delayed and only in part restored up to this time, will be more immediate than many have been led to anticipate.

CINCINNATI'S COAL PROBLEM.

That Cincinnati is gradually liberating herself from an almost total dependence upon Pittsburgh for coal supply is more than ever apparent from the figures of the past fiscal year. These figures appear in detail in the exhaustive annual report of Col. Sidney D. Maxwell, Superintendent of the Cincinnati Chamber of Commerce, to whom we are indebted for advance sheets. In 1877-78 the percentage of coal received from the Kanawha region of Virginia to the total recepts was 17.4; last year it was 28.1. Correspondingly the percentage received from Pittsburgh has decreased from 68.7 in the former year to 57.2 in the latter. The total receipts from the Kanawha region the past year were 586,535 tons, an increase of 85,548 tons over the previous year and the largest in the history of the trade. In five years the receipts of Kanawha coal have increased 248,932 tons, or 73 per cent., while, in comparison with 1879-80, the receipts of Pittsburgh coal show an increase of but 18,093 tons, or but 1.5 per cent. The receipts from the Ohio River region have fallen off, in the same period, 48,575 tons, or 30 per cent. The total receipts of coal, of all kinds, at Cincinnati and Cleveland (which we have taken the liberty to bring into comparison), were as follows for the years stated:

	1884.	1883.
Cleveland	2,806,905	1,580,938
Cincinnati	2,092,551	2,025.859

The difference in favor of Cleveland the past year is no doubt due to the fact that this is a more important point for trans-shipment than Cincinnati; the latter beyond doubt has a larger home consumption.

IRON WORKS ACTIVE AND IDLE.

Below we give a *resume* of the reported changes taking place among the iron works of the country during the past fortnight:

Resumed—Wilson, Walker & Co.'s plate mill, Pittsburgh; Clark & Co.'s rolling mill, Pittsburgh; Fishbach Rolling Mills, Pottsville, Pa., 1,000 men; Bethlehem (Pa.) Iron Co.; Crane Bros. Manufacturing Co., Chicago, 225 men; New Albany (Ind.) Rail Mills; W. D. Wood's iron works, McKeesport, Pa.; Troy (N. Y.) Mowing Machine Co., 75 men; American Sheet Mill, Phillipsburg, N. J., 125 men; Union Rolling Mill Co. and Cleveland Rolling Mill Co., Cleveland; Hollidaysburg (Pa.) Iron & Nail Co.; Painter's Rolling Mill, Pittsburgh; American Iron Works, Pittsburgh; Belmont Nail Factory, Wheeling, W. Va.; Morris & Marshall, Pittsburgh, molding department; Belmont Stove Works, Martin's Ferry, O.; Eagle Iron Works, Meadville, Pa.; Kimberly & Co.'s Rolling Mill, Sharon, Pa.; Baldwin Stove Works, New Castle, Pa.; Vulcan Iron Works, New Britain, Ct.; Oliver Bros. & Phillips, Pittsburgh.

Resumed at reduction—Bessemer Steel Works, Troy, N. Y., 10 per cent., 800 men; Rogers & Sheldon's iron works, East Bridgewater, Mass.; Western File Works, Beaver Falls, Pa.; National Tube Works, McKeesport, Pa.; Riverside Steel Plant & Nail Factory, Wheeling, W. Va.; Lamson & Goodnow Cutlery Works, Shelburne Falls, Mass., 300 men, 10 to 15 per cent. reduction; National Rolling Mill, McKeesport, Pa.; North Chicago Rolling Mills, 1,200 men, 7 to 10 per cent. reduction; Sharon (Pa.) Stove Works, 10 per cent.; Bellaire (O.) Nail Works.; Mahanoy Valley Mill, Exchange, Pa.; McCullough Iron Co., Northeast, Md., 10 to 12 per cent.; Hagerstown (Md.) Steam Engine Co., 10 per cent.; Edgar Thomson Co., Braddocks, Pa., 12½ per cent., 300 men; Peekskill (N. Y.) Stove Works; Ætna Nut Co., Southington Ct., 10 per cent.; Southington (Ct.) Rolling Mill, 10 per cent.

Notices of reduction—Hussey, Binns & Co., Pittsburgh, shovel works, 10 per cent.; J. P. Witherow's iron works, New Castle, Pa., 10 per cent.; Farrell Foundry & Machine Co., Ansonia, Conn.; Brown, Bonnell & Co., Youngstown, O., 10 per cent.

Strikes—McKay & Hammond's Iron City Chain Works, Pittsburgh; Landers, Frary & Clark cutlery works, New Britain, Conn.; Wm. Charles' and Geo. G. McMurty's nut factories, Pittsburgh; Porter, Dilworth & Co., Limited, Pittsburgh; five largest works in San Francisco, 1,500 men out against 15 per cent. reduction.

Shut down—Stewart Iron Co., Sharon, Pa.; Love Sewing Machine Works, Steubenville, O.; Walker & Pratt Stove & Range Co., Watertown, Mass., 125 men out.

IF it be true that the Amalgamated Association has issued a circular to its members asking for an expression of views, prior to the March meeting, on a 10 per cent. reduction of the scale for the coming year, it will go a long way toward simplifying the situation. The report is neither affirmed nor denied at the Association's headquarters, however.

THE total amount of pig iron remaining unsold January 1, 1885, in the Pennsylvania and Ohio districts using Lake Superior iron ores, was 117,065 tons. The same districts produced in 1884 1,585,618 tons of pig.

ACCORDING to the New York *Commercial Advertiser's* summary, the losses by fire in iron-works during the month of January footed up just $300,000.

EXCEPT Pennsylvania, Ohio was the only State making over half a million tons of pig iron in 1884.

Bessemer Steel Output of 1884.

Bulletin of the American Iron & Steel Association, Feb. 11

We have progressed sufficiently far in the collection of Bessemer steel statistics to ascertain that the production of Bessemer steel ingots last year was only about 116,000 net tons under that of 1883, when 1,654,627 net tons were produced, and the production of Bessemer steel rails was only about 170,000 net tons less than in 1883, when 1,286,554 tons were rolled.

CLEVELAND'S POSSIBILITIES.

INDUSTRIAL SITES ON THE LAKE FRONT.

Reclaiming Five Miles of Waste Land and Bringing Ore, Coal and Limestone Directly Together.

BY JOHN H. SARGENT, C. E.*

It is with a good deal of diffidence that I address you this evening. I am no orator, whereas my theme is worthy the eloquence of a Henry Clay. My heart, at least, is in it; for I have seen our goodly city grow up from a hamlet of 300 people, and I confidently expect to see it attain a thousand fold; at the close of this century it will reach a third of a million.

The great duty of our city authorities, capitalists and workers is to see that the coming thousands are profitably employed. It is my purpose tonight to point out a few things that it is very important to do, and to do quickly, in order to keep the ball a-rolling. Railroads and canals are well enough in their way, but it is our lake and river that connect us with the outside world. The signs of the times are that the next great move in this country is to regain control of, and extend our foreign commerce; and it behooves us to be "up and a-doing" to be ready to receive it. One of my main points tonight is to show how easily and promptly we may furnish berth and protection to any and all ships that may seek our harbor from the lakes or ocean. I propose to show you how we can readily create from the waste of waters five miles or more of the very best of wharfage and 800 acres of land entirely independent of all we now have. The General Government has done, and is about to do, a great work for us. When it has provided for the safety of the shipping of our great lakes, it is incumbent upon us to furnish business for it.

With these preliminaries, I will now pass to the discussion and illustration of the map here exhibited. Here are the outworks, provided by the General Government, which make the extensions by the city and its citizens possible. These Government works consist of a mole two miles long, giving perfect protection to more than 300 acres of anchorage in deep, navigable waters, and protecting, in addition, a like extent of space for piers, docks, wharves and slips, which may and will be improved by the real owners, whoever they may be, as required. I have included here a method of improving that part of it belonging to Lake View Park, which I will say something about further on.

Now let us turn our attention to that part of our lake front above and below the Government works. From the slate cliffs, a mile and a quarter above the present constructed breakwater, to Collinwood, some seven miles, the lake shore consists of wash banks of clay and sand, which for ages have been wasting away and forming shoals a quarter of a mile wide, inside of a dock line in 14 feet water. Without protection from the surf, this space is not only useless but the lake is constantly encroaching upon the land. To reclaim this space and protect the land from further waste I would have the city take up the work where the Government leaves it and extend it up and down the lake as far and as fast as business requires it, keeping a little ahead to invite capital. The city moles need not be built in more than 16 feet water; between this and the wharves and docks would be left a channel twice the width of our river, perfectly protected and free from floods, currents or shoals. Inside of these wharves, say 1,000 feet, I have designed a highway for both teams and railways, to make all these grounds accessible to both. (a)

The first move I would make would be to construct a mole, as above described, from the breakwater west to the slate cliffs, a mile and a quarter. As soon as the Government work east of the river is done, the same improvement should be extended east.

Just here permit me to digress a little and step on land. A few years ago, in company with some other gentlemen, I got up the project and charter for the "Cleveland Southern Railway." Nothing, however, came of it for the reason that the Cleveland capital and enterprise went off to Black River and Toledo to bolster them up instead of Cleveland, greatly to the temporary injury of Cleveland and permanently to their own pockets. This railway was to start from the breakwater and follow on the general line here indicated, crossing under the Lake Shore Road near Detroit street, and crossing the C., C., C. & I. near Linndale, thence to the Wadsworth coal mines, to Wooster, Coshocton, Zanesville, reaching the Perry County big vein of coal in about 150 miles from Cleveland. I have now combined with that project at Linndale a "Belt Railway" to connect the Cleveland Southern, the C., C., C. & I., the N. Y., C. & St. L., the Lake Shore, the N. Y., P. & O., the Valley and the Cleveland & Pittsburgh railways and all other roads from the south, east or west seeking business at Cleveland. I will not dwell further upon this fruitful subject at this time.

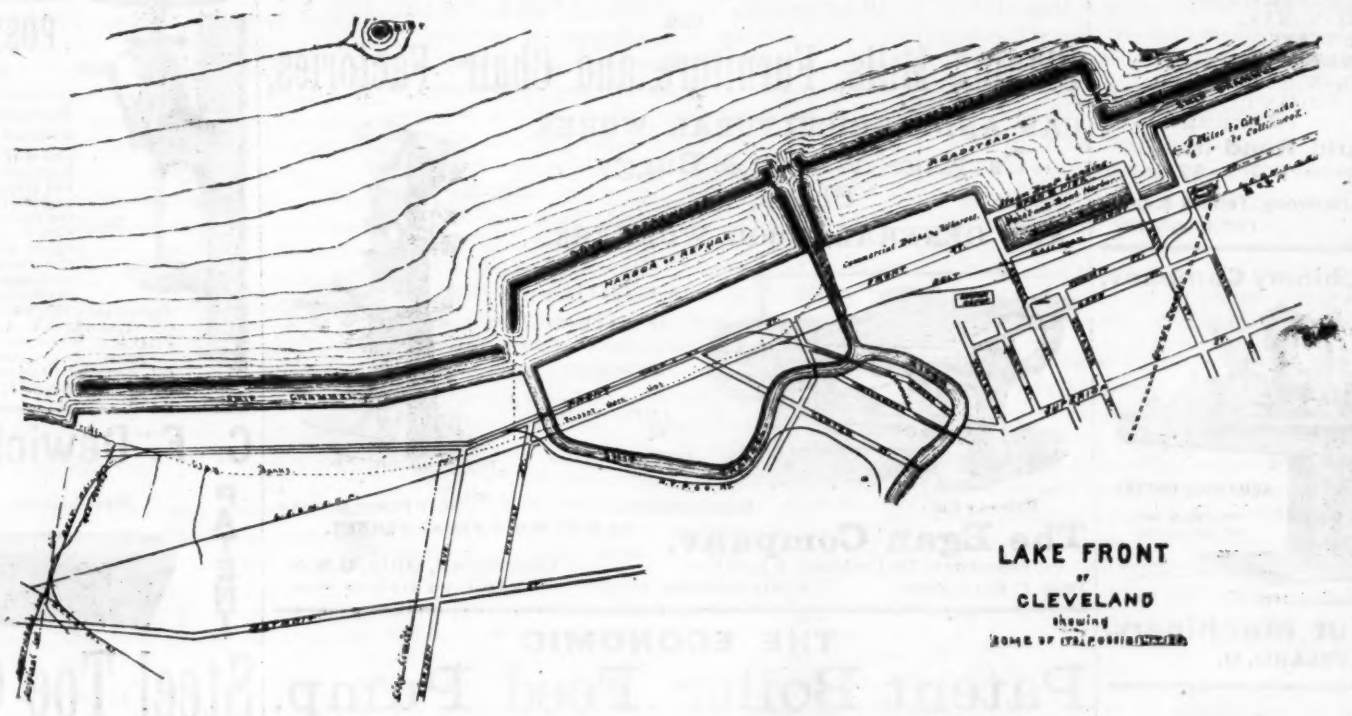
It would be hard to overstate the advantages accruing from the lake improvement above indicated. I have lately seen estimates of the cost of making iron in Cleveland, New Castle and Pittsburgh, and Cleveland did not come out second best, save in this: "Sites in New Castle were cheaper and the taxes less." If it be a fact that sites cost more in this city than in New Castle, it is because of their superior advantages; and as for taxes, they are for superior protection and facilities for doing business. These estimates are what called my attention back to our lake front—for its waste is always haunting me. These improvements provide us ample sites for blast furnaces, rolling mills, shipyards, textile factories, &c. with the fuel on one side of them and ore, limestone and other materials from the lakes and ocean on the other. The slag and waste of a blast furnace, instead of being a nuisance, may be dumped into its docks to make land. All the dredgings from the river, all the solid waste of a great city, are turned to account in making land instead of forming bars in the outer harbor. When the Government works are completed, all the sand and heavy materials brought down by our river will be dropped inside the breakwater and will have to be dredged out; and here is a place to put it, in all weathers, where it will do good instead of harm. I have heard complaints that our brick-making material was getting scarce, but here our city mole will make these clay banks available —enough to make bricks for several cities like ours. Another consideration worthy of note: Our water supply will no longer be made turbid by every northwest storm. (b)

While providing industries for our constant and fast-increasing population, I would not neglect or impair its means of enjoyment. I would conscientiously preserve, improve and extend Lake View Park. The main feature to this end is a bathing beach a half-mile long, which while it is protected from the surf, has free circulation fully preserved. Its other features may be learned by inspecting the map. In front of the Park is the passenger excursion and pleasure boat landing entirely apart from the busy channels of trade, approachable by bridges over the railroad tracks at Seneca and Erie streets and under them at Muirson street.

I well remember seeing the first steamer upon the Great Lakes, the historic Walk-in-the-Water, come to anchor off the mouth of the river and land her freight and passengers by means of lighters upon the sandy beach, or if the bar at the mouth of the river would permit, upon the muddy banks of the river; and I fully expect to see steamers from Europe drawing 20 feet water discharging just here the hardy sons of toil who come here to raise food to be carried back by these same ships to feed the hungry millions they have left behind them, and ships from the West Indies and South America unloading cargoes of sugar, fruit and coffee, and taking on Cleveland machinery for return cargoes.

And now, gentlemen, we have turned our lake front into a busy hive of industries, and we have not only shut off from our water supply the muddy waters from these clay banks but we have opened out the river bed into the lake, through which, at times, will run the foul waters of our dark and deadly great sewer, the Cuyahoga River, direct to the lake crib, whence it will be distributed by the water-works impartially to every man woman and child in our great city. I should feel that I had neglected my duty if I did not provide a remedy for this—a reiteration of my annual plea for the same thing. The remedy is perfect and should not be neglected another year. I will briefly state it: Here at the intersection of Front and Muirson streets I would place sewage elevating works, and thence I would run a tunnel similar to our water works tunnel to the flats of the 1st, 3d, 8th, 9th, 13th, 14th and 22d wards. This tunnel should be horizontal and at such depth below the bottom of the river as it could be most cheaply constructed, and should be from six to four feet in diameter. Into this tunnel should discharge the Walworth and Kingsbury runs, and all the sewers of the West Side and those of the East Side that most easily seek the river valley. To induce a current in this tunnel that would sweep through it everything that passes through the sewers—a current of not less than two feet per second, would require an engine of 80 horse-power. Two engines would be required, one idle and one working to insure constant work, and on extraordinary occasions both engines might be worked to scour out even gravel and bricks from the tunnel and purify the river.

From the elevating works through Front street should be run a main sewer to Case avenue and thence out through the "city mole" to the open lake under the ship channel. In Front street the sewer would be only low enough to be out of the way of frost, and may be level, for this and the tunnel would be operated by the "head" given by the engines, instead of fall.

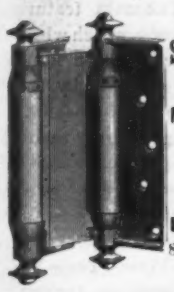


*Read before the Civil Engineers' Club of Cleveland, February 10, 1885.

(a) I have said the city mole need not be built in more than 16 feet water. It might be well to incur the additional expense required to carry it out to 20 or 25 feet water. A particular survey would doubtless show that each additional foot of depth would give 200 feet in width of waterway.

(b) Exhaustless supplies of pure ice will annually form here for home use or to transport by rail or canal to cool off the hot blood of the South. Just here is a natural gas spring, and the indications are that all along the coast borings 600 feet will reach their source.

Concluded on page 103.



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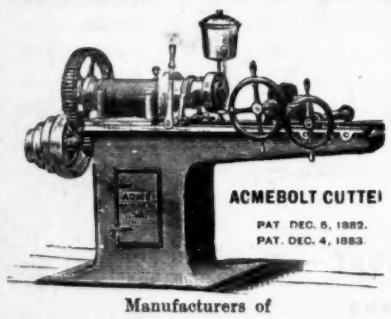

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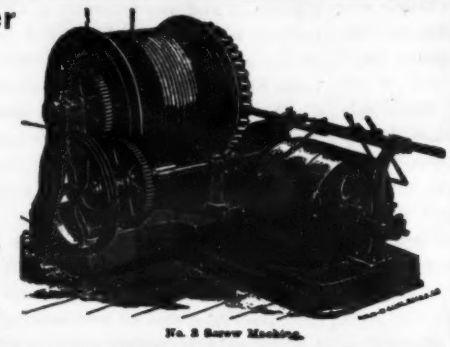
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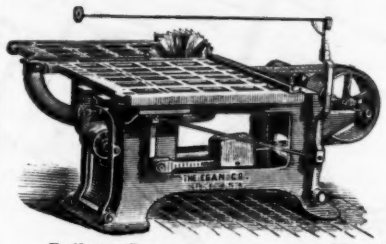
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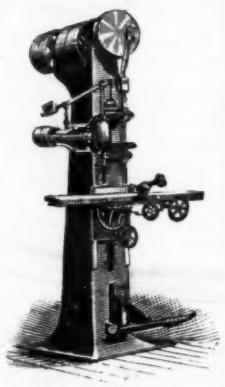
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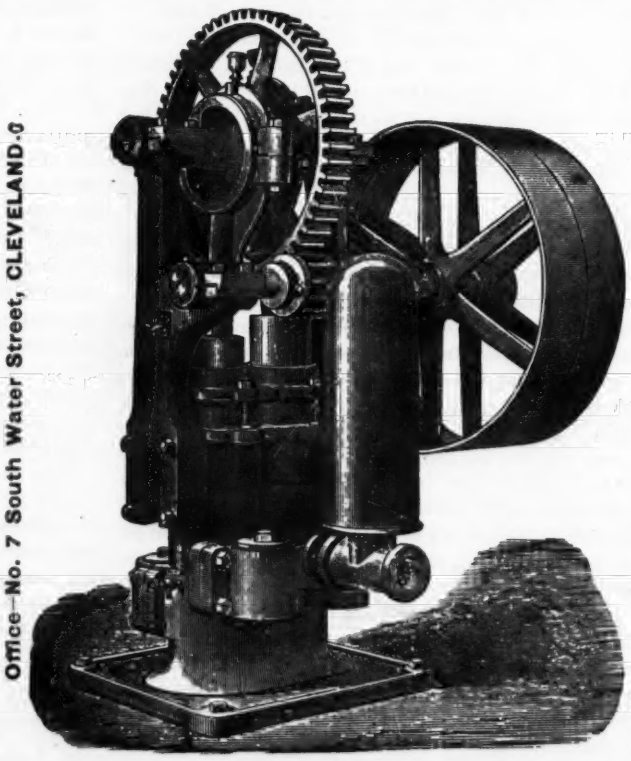

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The Double Acting No. 1 Pump we bought of you, manufactured by I. B. Davis & Son, Hartford, Conn., gives splendid satisfaction, working smooth and even, no noise, and free from thump or jar, SUPPLYING ALL THE WATER WE WANT. Would not exchange it for the best steam pump made. Our engineer endorses the above, and thinks it the most perfect machine in the works. We anticipate no trouble from it in the least.
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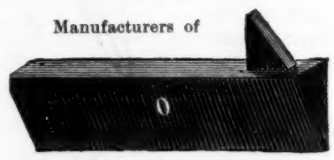

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CLEVELAND'S POSSIBILITIES.

Concluded from page 101.

Into this sewer may be dropped all the night soil and other soluble filth of the whole city, thus doing away with another great and increasing nuisance. I have perfect confidence that this filth may be dropped into receivers anywhere along the tunnel, for the rush of foul liquid two feet per second through a five or six-foot tunnel will beat it into an impalpable mass. This sewer in Front street would be an intercepting sewer for all the sewers reaching the lake from the city front east of the river; otherwise the sewage might be forced through a pipe on the bottom of the lake out through the city mole into deep water. (c)

I have seen the Kingsbury and Walworth runs when they were crystal springs of limpid water, but they will never be that again. The above system, however, will effectually hide them from human sight and scent. I have seen our river foul and muddy only in times of flood; now at such times only is it bearable to eye or nose. With this system the sewage pumps will draw the water from the upper river, and this with the evaporation, will, in times of drouth, induce a current from the lake southward and change the river water into lake water at least weekly.

It is, perhaps, not good taste to fight your battles before the enemy appears, nor to answer objections that men never made, but I will say that the property owners upon the river take alarm at the construction of every bridge below them and at the construction of every superior means of crossing our deep and dreary valley, fearing that the grists that were compelled to pass through their devious ways would be diverted to other mills than theirs. And now these same people may feel that their pre-emption has been violated if the shipping of the world finds means of exchanging cargoes without passing the narrows, bars and bridges below them. I can only say to these people that the world will not be cramped, will not be satisfied without the very best means attainable at Cleveland, or they will find a more wide-open community. The policy of our country has been such as to create very sharp competition right here at home, and he that does not put his very best foot forward is sure to be left. No matter what you do, the river flats will be worth far more as a part of a city of a half million than of one of a quarter million; so that every thing that tends to swell our city's wealth and population is a benefit to every foot of ground and person in it.

Some people take fright at the mere mention of a railroad for fear that somebody will make more money out of it than they do themselves. If they fear that the "Belt Railway" will be made a monopoly of, let the city build, own and lease it as they do the tracks upon the Viaduct, to be used impartially by all by who will give it business.

Cleveland, Ohio, has advantages in the way of making iron to make her a successful rival to her namesake in Great Britain, combined with others sufficient to place her alongside Birmingham, Sheffield and Glasgow. She is in the heart of a far more extensive country; why shall we not "go in and win"?

In this utilitarian age no great work is, or should be, undertaken without first estimating the cost. When our City Fathers wake up to the necessity of doing something of this kind, they will call upon the City Engineer to furnish estimates of its cost. I have sufficiently studied this question to assert my confidence that to construct the mole west to the slate cliffs and east to Case avenue, nearly three miles in all, and sewage tunnels enough to drain the whole valley, as above indicated, would cost just about the sum now asked for the new Viaduct for the benefit of a single ward—a million dollars; and it will cost much less to operate and maintain. The cost of the elevating works would be an additional item which I will leave for our mechanical engineers to wrestle with. (d)

If ever city sewage is utilized for agricultural purposes, right here in front of the works is the best possible place to do it by means of large settling reservoirs to be alternately filled and drained, enclosed and ventilated through the furnaces of the engines. The method, however, by which to do this profitably is yet to be discovered.

Now let us inquire a little into the cost of this improvement and the ways and means for meeting it. It is not practical to make a very close estimate without a survey; but assuming that the line of 14 feet water is an average of 1,500 feet out from the present water line, about 500 cubic yards of filling will be required for each lineal foot of mole. A mole built upon the Government specifications in 16 feet water should not cost more than $50 per lineal foot, and a good dock should be built for $5 per lineal foot; or, in round numbers, for mole, ship channel, dock and 1,500 square feet of land we should have to expend $150 per lineal foot of mole or 10 cents per square foot—$4,356 per acre of land, on an unsurpassed water front. In addition to this, Front street would have to be paved and sewered. The cost of this should be paid by the occupying railways for right of way, and the adjoining lands.

As to ways and means, the legal gentlemen will doubtless have something to say. One way would be to secure an enabling act from the Legislature, allowing the city to occupy this portion of Lake Erie and appropriate enough of the shore to get material to make the filling with, authority to issue bonds to pay the cost of the work and sell or lease the made lands to reimburse them. To secure earth for the filling, two or more hundred feet of the present wash bank should be appropriated. This land would be worth more on the lower level than on the upper. The filling outside of the "Belt Railway" should be done only as required for use. This work would serve as a balance wheel to employ our surplus labor in times of depression.

A half million of dollars spent annually for these objects during the next five years would give us three miles of unsurpassed water front, a clarified river and 500 acres of land better suited for manufacturing purposes than any we now have—all the creation of the continued labor of 1,500 men—only one quarter of our annual increase in population, besides greatly stimulating individual enterprise. Here is a broad field for live members of this Club and the Case School of Applied Science to exercise their skill and apply their science.

And now, in conclusion, Mr. President and gentlemen, allow me to set before you a vision of the future. Let me call your attention along here upon the bluffs 60 feet above the lake to a mile-long line of coking furnaces or retorts backed up by trains of coal direct from all the coal fields of Ohio, between the Hocking Valley and Steubenville; and here a longer line of like retorts backed by trains of coal from the Mahoning Valley and Pittsburgh and beyond. These coking retorts conserve the gas which is carried thence through pipes all over this then great city for heating purposes, thus banishing the great smoke nuisance. The resulting coke is drawn from these retorts into the furnace tops of a long line of iron furnaces at whose mouths lie ships from the shores of all the great lakes between Minnesota and Lake Champlain, laden with the iron ores of Michigan, Minnesota and Canada. These furnaces discharge their molten metal into great converters, where it is "blown" into soft iron or steel of all desired grades. Thence with all its glowing heat upon it, it is cast into endless forms or rolled into plates and bars. Still on it passes, through the mills and machine shops and shipyards, to be transformed into needles or great steel monsters of the deep, to be distributed by water or by land to the uttermost parts of the earth. Here, too, the waste heat will be converted into the electric flash that shall turn our night into day and turn the poor car horses and mules out to grass.

(c) I am aware that the daily papers have recently been teeming with projects "How not to do it", and one of them at least has some Force in it. Our worthy brother, the City Engineer, has had his head so stuffed with "high level bridges" that we must excuse him for his high level sewer project. As for me I desire to go to the very bottom of all this filthiness.

(d) At most it would be the building and housing of a hundred H. P. engine and pumps and running continuously half the time at less than half their capacity.

Bile vs. Enterprise.

Mechanical Engineer.

The *Iron Age* indulges in some bilious strictures on its contemporaries who have published the results of letters written them on general business in 1884. The *Iron Age* says:

"We have no reason to criticise an editorial policy which discovers value in this class of contributions, for they may have another value than appears in their very limited interest as reading matter, but we venture the opinion that the best way to get at the facts is not to open the columns of a newspaper to a deluge of crude, undigested opinions from the class of men who are likely to feel flattered by invitations to write letters for publication," etc., etc.

And it proceeds to give its views and criticise manufacturers in harsh terms. If it has no reason to criticise, why does it immediately do so at great length? It must be gratifying to those of its advertisers who have written such letters as it condemns (and a large number of them have), to be stigmatized "as a class of men" with "crude, undigested opinions." The *Iron Age* writer seems to be the one troubled with sluggish digestion.

Industrial Notes

CLEVELAND.

*** THE Globe Iron Works are at work on a new steel boiler 8½x16′ for the steamer Worthington.

*** THE oldest manufacturing establishment in Cleveland is the flour and paint mill machinery manufactory of G. R. Gale. It dates back to 1824.

*** THE Upson Nut Co. recently received their twelfth cold-punch nut machine from the Pawtucket (R. I.) Manufacturing Co., who are now engaged on the thirteenth for the same firm.

*** EIGHTY out of the full force of 125 men are at work at the Powell Tool Co.'s shops. The works have been running three weeks in the month, but it is expected to run on full time beginning with March 1.

*** I. N. TOPLIFF, of this city, reports trade as opening good in his line of carriage hardware. He shipped about 4,000 sets of bow sockets in the first seven days of this month, which is better than last year.

*** MYERS, OSBORN & Co. are employing 100 men at present and expect to double their force within a short time. They are about to introduce to the trade a full line of first class ranges and wood cook-stoves of new and original design.

*** RECENTLY elected officers of the Globe Iron Shipbuilding Co. are: H. D. Coffinberry, President; J. F. Pankhurst, Vice President; Robert Wallace, Secretary; John B. Cowle, Treasurer; J. F. Pankhurst, Designing Engineer; J. H. Smith, Superintendent.

*** THE Brick Rod Mill started up on Friday morning.—The wire mills are now working eleven-hour turns in place of ten hours.—A steam pipe at the Bessemer steel works burst last Monday, causing a stoppage of about half a day.—The bar mill at the Ætna started up on Wednesday morning, working four-hour turns.—The rail mill started up on Thursday night, also the old bloomer, double turn.—[South Cleveland Advocate.

*** THE Cleveland Stove Co. have begun the shipment of Summer goods. Shipments are made to Iowa, Kansas, Nebraska and Illinois. They are running with 50 men at present, 80 being the full complement. The Lyman vapor stove manufactured by this company has an entirely new patent oven attachment for 1885. The flame is carried up into a drum that leads to the oven. By keeping a supply of heat under the oven it is said to produce very fine effects in baking. The oven has a cast iron bottom and is very strong. The drum sets the oven up nine inches, which allows the door of the oven to swing over any cooking utensils that may be in use on the front burners.

OHIO.

*** THE William Miller Range & Furnace Co., Cincinnati, has been incoporated; capital, $100,000.

*** LEHR BROS., Fremont, manufacturers of agricultural implements, are making arrangements to enlarge their works. They will also add some new machinery.

*** MR. LOUIS SCHAEFER has donated a site for the new Linton Cutlery Works, Canton. The *Repository* says: As soon as the weather will permit the erection of the works will be commenced.

*** BORGER BROS. & Co., proprietors of the City Boiler Works, Columbus, intend to build an addition to their works this spring. They are running full and look for a good season in their business.

*** THE Forsyth Scale Works report trade steadily increasing with since the opening of the new year, more orders being received in the past month than for the preceding three months.—[Yonngstown News Register.

*** A. B. CORNELL, President; Alf. H. Rice, Vice President; Chas. W. Foote, Secretary and Treasurer; J. F. Wilson, Superintendent; L. D. Woodworth, Solicitor, are the newly elected officers of the Inventors' Aid Co., of Youngstown.

*** JUDGE BRADBURY, the assignee of the Crescent Iron Works, has consented to have the mill start and work up the stock on hand, which will take about three weeks. There is also talk of having it continue to run. —[Pomeroy Telegraph.

*** THE Diamond Match Co., of this city, on Saturday bought out the Akron Match Co., whose works are located on State street in this city. The latter company

Concluded on page 105.

Wanted.

POSITION AS SUPERINTENDENT OR Foreman of a machine shop, by a first-class machinist. Over ten years experience building and repairing machinery. Can give best of references. Address W. W., care Western Machinist, Cleveland, O. 94

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49 Power Block, Cleveland, O.

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Send for circulars and price list of Cleaner and Hose. Good, reliable, energetic agents wanted.

eow 93

CLEVELAND BUSINESS DIRECTORY.

Bolt and Nut Works.

THE HOTCHKISS & UPSON CO. Manuf'rs. Machine, Plow & Elevator Bolts, Coach Screws. 15

Boiler Makers.

SMITH & TEACHOUT—(Established 1857.) Boilers, Tanks, Stills, etc. 644 Broadway.

CHATTERTON, J. Boiler Maker. Repairing a Specialty. 30 West River St. 4

Bridge and Boiler Builders.

BUCKEYE BRIDGE AND BOILER WORKS, mfrs. of Arch and Truss Bridges, Boiler Tanks and Oil Stills. Bet. Wasson St., and Case Ave.

Boiler Feed r.

EBERMANN, W. S. & SONS, manfrs. of the celebrated Ebermann Boiler Feeder. Send for Circulars and Price List. 2

Belting, &c.

BODIFIELD & CO. Belting and supplies, 8 South Water Street. 2

Coal. Iron and Ore.

ANDREWS, HITCHCOCK & CO., Briar Hill Coal and Pig Iron. 101 St. Clair St. 81

JACKSON IRON CO. Iron Ore and Pig Iron. Fayette Brown, Gen. Agent. 101 St. Clair street. 15

RHODES & CO. Coal, Iron Ore and Pig Iron. 101 St. Clair street. 1

DALLIBA, J. H., Iron Ore. 51 Grand Arcade Building, 101 St. Clair St.

BABCOCK, MORRIS & CO., —COAL.— Grand Arcade Building, Cleveland, O. 5

PICKANDS, MATHER & CO., Iron Ore and Pig Iron, 101 St. Clair St. 61

MINNESOTA IRON CO. Vermillion District Ores. Geo. H. & S. P. Ely, agents, 15 Merchants Bank Building.

Carriage Bolts.

THE COLWELL & COLLINS NORWAY BOLT CO., manufacturers of Philadelphia Carriage and Tire Bolts. 41

Carriage Repository.

GREENE'S J. O., Carriage Repository, 408 Superior street and 51, 54 and 56 Rockwell street, dealer in Fine Carriages. Repair shop in connection. 41

Dyers.

BICHLEMYER, A., 122 Seneca St., Gentlemen's and Ladies' Clothes Cleaned and Dyed. 74

Foundries.

BOWLER & CO., Car wheels, Patent Chilled Frogs, and all kinds of castings. 9 Winter.

LAKE SHORE FOUNDRY, Water and Gas Pipe, Light and Heavy Castings. Alabama St. 61

TAYLOR & BOGGIS FOUNDRY CO. Fine Gray Iron Castings. 65 to 73 Central Way.

FITZSIMONS WM. & SON, Rolling Mill and Machinery castings. Rolls a specialty. No. 435 Broadway. 64

Foundry Facings.

CLEVELAND FACING MILLS, Foundry Supplies, Cor. Scranton & Carter Sts. 21

Hardwood Lumber.

MARTIN & BARRIS, dealers in all kinds of Hardwood Lumber. 130 Central Way. 51

Hardware and Iron.

BINGHAM, WM. & CO., Hardware, Iron, Nails and Metals, 148 and 150 Water St.

CLEVELAND ROLLING MILL CO., manufacturers of Steel and Iron Wire and Steel Tire. 34

Lumber.

WOODS, PERRY & CO., manufacturers and dealers in Lumber, Lath, etc., 5 Carter street. 4

FISHER, WILSON & CO., Wholesale lumber dealers (pine & hardwood), rough and dressed lumber, timber, lath, shingles, etc. 47 Central Way. 82

Machinery.

KRITCH, K. E., Metal Pattern Maker, Small machinery repaired. Lawn Mower Sharpening a specialty. 42 South Water St. 71

Oil Manufacturers.

AMERICAN LUBRICATING OIL CO., manufacturers of lubricating oils, 23 Euclid ave. 84

Steam Furnaces.

CUYAHOGA STEAM FURNACE CO., build large engines for Stationary and Marine purposes. Blowing Engines for Blast Furnaces and Steel Works. Steam Pumps for Copper Mines, and Steam Helve Hammers for Forges and Bloomeries. Make all kinds of heavy Castings. Foundry and Machine Shop corner Detroit and Center Streets.

Steel Stamps and Stencils.

FLEHARTY, J. H. & Co., Rubber Stamps, Seals, Stencils. 197 Superior street' 54

Stair Builder.

PFEIL, CHAS., Stair Builder; Hard Wood Mantles and Office Railing. Works, 49 and 51 Canal street, Cleveland, Ohio. 41

BUSINESS DIRECTORY.

Akron, O.

AKRON IRON CO., manufacture best Common, Refined and Charcoal Iron.

McNEIL, J. C., Steam Boilers, Heavy Sheet Iron Work. Repairing promptly executed.

TAPLIN, RICE & CO., manuf'rs. of Stoves and Hollow Ware, dealers in Tinners' Stock, etc. 04

WEBSTER, CAMP & LANE MACHINE CO., Founders and Machinists, 12 Main street. 84

CAHOW BROS. manfrs. of and dealers in Wood and Metal Pumps, Pipe, etc. 225 West Market street. 42

Alliance, O.

McFARLAND, J. W. Engine and Machine Builder, and General Machine Jobbing. 41

CHAPMAN, G. L., builder of Engines and Machines. Also Jobbing and Repairing.

Buffalo, N. Y.

WHITE, L. & I. J. manufacturers of Coopers' Tools, Carpenters' Tools and Ship Tools. Also manf'r's of Planer Knives and Machine Cutters to order. 310-314 Exchange street. 33

THE BUFFALO NUT AND BOLT CO.—[Limited.] Manufrs. of Hot Pressed Nuts, Bolts, Washers, Rivets, &c. 226 Ohio St. 31

Bri gerport, Ct

ATLANTIC HOTEL, directly opposite the Railroad Depot. D. Foland, proprietor. W. Foland, H. W. Terrell, Clerks; Wm. Richardson, Night Clerk.

Canton, O.

NOVELTY IRON WORKS, Mill Work, Shafting, Engines, Imperial job printing press etc. 73

BELDEN Burner Co.—H. S. Belden, B. C. Goodwill. 158 and 160 S. Market-st., Manfrs of gasoline burners and fixtures, and contractors for lighting streets. 2

THE SUN VAPOR LIGHT & STOVE CO., manufacturers of Vapor Gas Lights, Gasoline Stoves and Tinners' Soldering Furnaces. Contractors for lighting the streets of cities and towns. No. 116 E. 5th Street. 72

Columbus, O.

REYNOLDS BROS., Manufact'rs of hand-cut Files and Rasps. Old files re-cut. Send for Price List. 11

CITY BOILER WORKS, manf's of Stationary, Portable, and Locomotive Steam Boilers. All work warranted. Borger Bros. & Co. 12

ROYCE & PULLING, m'frs of Patent Steam Pumps for all purposes. Salesroom, West Broad street; Works, Nos. 5 & 7 Scioto street 93

MALLEABLE IRON WORKS, Munson, Hayden & Co., mfrs. of Refined Malleable Iron Castings, Wire Dies, etc. Estimates furnished; correspondence solicited.

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THE CINCINNATI STEAM HEATING CO. manfrs, dealers and contractors. Warming and ventilation of public and private buildings a specialty. Boilers, Radiators, Pipe, Fittings, Brass Goods, &c. Correspondence soliced. 187 West Pearl street. 92

Geneva, O

THE GENEVA MACHINE CO., manufacturers of Iron Machinery and Gray Iron Castings.

Meadville, Pa.

CURRY & CO. general jobbers in Castings of all kinds. 43

Niles, O.

REEVES BROS., Manufacturers of Boiler, Tank and Sheet Iron Work, etc. 64

Oil City, Pa.

REID, JOS. Machinist, steam engine and pump repairing. Brass and iron castings light and heavy, made on short notice. 2

Rochester, N. Y.

GOWE JNO. N. mfr of Specialties, such as Machine forging, bridge bolts and trusses railroad switches. spike, mall, chisels, &c. 23

WOOD-WORKING MACHINERY. Send for Catalogue. J. S. Graham & Co. 43

GLEASON, WILLIAM, manufr. of Machinists' Tools, Lathes, Planers, and Pat. Gear Dressing Machines. 10 Brown's Rac.

New Haven, Conn

LAMBERT, GEORGE D. builder of Model and Special Machinery, Dies, tools, Punches, etc. Wood and Metal Patterns. No. 27 Artisan street. 54

Pittsburgh, Pa.

PRINTING PRESSES. W. A. Bunting, manufacturers' agent. Printers supplies, type, cards. 42½ Sixth street. [Up stairs.] 17

Ravenna, O.

THOMPSON, T. F. dealer in Agricultural Implements, farm machinery, hardware, seeds. fertilizers. &c. Cor. Main and Prospect Sts. 51

Toledo, O.

TOLEDO FOUNDRY AND MACHINE CO., builders of Steam Engines, Circular Saw Mills and all kinds Machinery. Water street, cor. Cherry. 03

Youngstown, O.

BELL, EDWIN & SONS, manuf'r's. of Nail Kegs, Pat. Coiled Hoops, Slack Barrel and Keg Heading and Oil Barrel Stock. 1

A Mid-Winter Excursion to New Orleans.

The Pennsylvania Company has placed on sale a line of excursion tickets to New Orleans which take the passenger to Cincinnati by rail, thence by boats of the Southern Transportation Company to New Orleans, returning by rail from New Orleans to starting point. The boats leave Cincinnati Wednesdays and Saturdays of each week and make the trip in ten days. These tickets afford the passenger full variety in the way of travel, and will prove popular with tourists. Tickets for this trip include berth and meals on the boat and are good for 40 days, allowing ample time for sight-seeing in the Crescent City and visiting the many places of interest on the Mississippi and Red Rivers and the Gulf Coast. Excursion tickets to New Orleans via rail both ways and via boat both ways are also on sale at Pennsylvania Company ticket offices.

For rates and time tables call upon or address the agent of the Pennsylvania Company at nearest station, or E. A. Ford, General Passenger Agent, Pittsburgh, Pa.

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THE AMERICAN AND FOREIGN INDUSTRIAL ASSOCIATION, of New York, undertakes the sale of Patents in Europe. Is connected with the "Joint Stock Association" of London, and has Agents in Paris, Brussels and Berlin. Inventors should consult the Association, if possible, before making applications for Patents. Many foreign Patents are rendered worthless by defective specifications. or by premature issue of American patents. For further particulars address HENRY A. HERBERT, President, 155 Temple Court, New York.

PICKANDS, MATHER & CO.

IRON ORE AND PIG IRON.

Corner Bank and Superior Streets,
Cleveland, O. 61

ECLIPSE ELECTROTYPE AND ENGRAVING CO.
147 ST. CLAIR ST.
CHAS. W. DEAN. CLEVELAND, OHIO.

J. M. Allen, Pres. Wm. B. Franklin, V. Pres
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GEO. P. BURWELL, Gen. Agent.
246 Superior St.,
CLEVELAND, O.
A. C. GETCHELL,
9 Chief Inspector.

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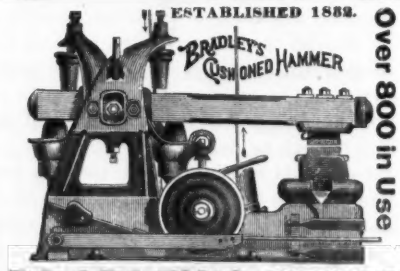

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It approaches nearer the action of the Smith's Arm than any Hammer in the WORLD.
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THE NATIONAL MACHINERY CO.
SPECIALISTS IN
TIFFIN, OHIO. CLEVELAND, OHIO.
NUT AND BOLT MACHINERY

MARKET REVIEW.

OFFICE OF IRON TRADE REVIEW.
CLEVELAND, O., FRIDAY EVENING, Feb. 13, 1885.

Iron Ore.

Nothing has occurred to relieve the monotony of the ore market. Small sales are the rule, and consumers now in the market, refuse to buy beyond immediate wants. Nothing has developed as yet in regard to next season's prices. Consumers still insist that lower prices must rule, while sellers simply remain passive and await developments. No negotiations are yet being made, and until seller meets buyer nothing definite can be decided upon. Receipts of ore at Cleveland the past week amount to 29 tons, shipments 9,886 tons against shipments of 7,703 tons last week. We quote:

No. 1 Specular and magnetic Bessemer ores per ton	$5 50@6 25
No. 1 Specular (non-Bessemer) ores per ton	4 25@4 75
Bessemer Hematites	4 75@5 25
Non-Bessemer Hematites	3 75@4 25

Pig Iron.

The pig iron market presents only the same features which have characterized it for some time past. No improvement in the size of orders has taken place and the volume of business does not increase materially. There is said to be considerable cutting of prices outside the city. Receipts of pig iron at Cleveland the past week amounted to 1,251 tons, shipments 76 tons, against receipts of 1,146 tons and shipments of 199 tons last week. We quote f. o. b. cars Cleveland 4 months:

CHARCOAL PIG IRON

No. 1 Lake Superoir charcoal	$20 50@21 00
No. 2 Lake Superior charcoal	22 00.....
Nos. 3 and 4 Lake Superior	21 00@21 50
Nos. 5 and 6 Lake Superior	21 50@23 50
Nos. 1, 2, 3, 4, 5, Salisbury	34 50@36 00
Southern Car Wheel	25 00@28 00

BITUMINOUS AND COKE IRON.

No. 1 Bessemer	$18 75@19 25
No. 1 foundry, all lake ores	18 75@19 25
No. 2 same	17 75@18 25
No. 1 foundry, lake ores, with cinder mixture	17 75@18 25
No. 2 same	16 75@17 25
No. 1 foundry, native Ohio ores	18 75@19 00
No. 2 same	17 75@18 25
No. 1 silvery, native Ohio ores	18 75@19 00
No. 2 same	17 75@18 25
No. 1 gray forge, red short	15 50@16 50
No. 1 gray forge, neutral	15 50@16 50

Manufactured Iron.

The market the past week has been impeded considerably by the continued cold weather although inquiries have come in somewhat more freely. Some few jobbers and consumers show a disposition to stock up, but the feeling is not general, there is a growing tendency in that direction, and more liberal orders are expected as soon as the Winter breaks up. Reports from the Mahoning Valley are to the effect that the mills are receiving sufficient orders to keep them running, but only one or two are on double turn. No improvement of prices are noted. We have heard nothing more in regard to the circulars to be issued affecting a closing of the mills in this vicinity. Not all the manufacturers, if any, have received them, and the probability is the scheme has fallen through. As regards wages, the Amalgamated Association have sent circulars to all the subordinate lodges asking opinions in regard to a contemplated lowering of the scale 10 per cent. The result has not as yet been announced, but the manufacturers demand a 30 per cent. reduction, and a concession of 10 per cent. would hardly be satisfactory. A compromise on a basis of $4.50 is not at all improbable.

Scrap Iron.

The scrap market has developed no new features the past week to relieve the general monotony of the situation. Few goods are changing hands and prices are somewhat uncertain. We hear of no sales whatever of importance. Schwarzenberg, Hays & Co. have succeeded to the business of the well-known scrap iron dealers H. L & E. A. Schwarzenberg. The firm have recently moved into new quarters at 105 Scranton avenue. Their premises are large and commodious, having a frontage of 70 feet and a depth of 175 feet, with first-class railroad facilities, a switch, upon which five cars can be handled at one time, running through the yard. With their well-known business integrity and persevering push and energy coupled with unsurpassed facilities the new firm may be expected "on deck" with their full share of what business there is going.

Steel Rails.

This week's Iron Age says: There has been consider able inquiry for steel rails, and we hear that one or two contracts have been closed. In one instance an order given by a Southern road last year was unfilled on account of the financial embarrassment of the railroad. Now that the road has gone into the hands of a receiver the Rails are to be furnished. We quote $27, nominally.

Hardware.

Demand for general stocks are on the increase, and, although orders are generally light, and few are disposed to lay in heavy stocks, still the aggregate of orders make a very fair trade for this season of the year. Rink supplies are at present a prominent feature. Traveling men report a fair trade in light orders. Collections are close. The Washburn & Moen Manufacturing Co. have reduced the royalty or barb wire from 30 to 12½ cents. The discount on locks has been changed from 70 and 2 per cent. to 66⅔ and 5 and 2 per cent. The quantity discounts and terms remain unchanged. The list price on some of the cheaper locks has been changed so as not to change their selling price under the new discounts. The association of manufacturers of augers and bits has been broken up by the withdrawal of a large firm, owing to members cutting under agreed prices.

NAILS.—The card rate as advanced to $2.25 and 10 cents less in car load lots has been well maintained as a general thing. The demand is only fair, and nothing to warrant an advance in prices, but the fact that nails could not be made for what they had been selling for, which was demonstrated by the annual stock-taking, was probably the cause of the advance, as many of the manufacturers declared that they would rather shut down than run at an actual cost. The proceedings of the last meeting of the Western Nail Association, which was held the past week, have been kept very secret, but it is rumored that there is already some opposition developed by the Pittsburgh nail manufacturers to the rapid advance. It is reported that the association decided to shut down the mills and discharge the workmen, on the pretext of hard times, in order to pave the way for a reduction of wages, as there is a manifest fear on the part of manufacturers that the workmen will take the recent advance as an indication of business prosperity, when in reality there has been no improvement.

Metals.

The metal market simply holds its own and is quiet but steady. Prices are unchanged and firm, we lower our quotations on copper to more nearly accord with the market.

Machinery Oils.

The market continues very quiet, and no special changes can be noted. Demand is light, and prices are unchanged.

Coal.

The continued cold weather has a stimulating effect on the coal trade, and at present it is decidedly brisk in a retail way. Wholesale trade is very fair. The miners of the Tuscarawas Valley refuse to accept the reduction of 10 cents, and the operators at a subsequent meeting re-affirmed their determination to reduce the rate. A strike is the result. The consequent effect on the market is not yet apparent and will depend somewhat on the duration of the strike and the ability of other fields to supply the demand. It must necessarily, however, give more tone to the market. Receipts of coal at Cleveland the past week amounted to 848 tons of anthracite and 20,198 tons of bituminous; shipments 165 tons of anthracite and 509 tons of bituminous.

Coke.

The syndicate have ordered the firing of 20 per cent. of the idle ovens belonging to the pool. This increase is probably warranted by the starting up of the North Chicago Rolling Mill Co.'s furnaces, those of the Edgar Thomson Steel Co., and others, but in view of the fact that the syndicate had previously hard work to dispose of the output before these furnaces started up, and many cars stood on the tracks without destination, it is a fair presumption that the effect it would exert on the producers who have not signed the agreement was one of the moving causes of the order being promulgated, in hopes that it would hasten their signatures. However, enough have signed the provisional agreemement which is based on the price being advanced to $1.25 on the first of April, to guarantee the continuance of the pool. In fact, the pool and syndicate according to a Pittsburgh paper is a necessity to some of the parties interested, whom it is said would be forced to the wall in case of its abandonment. The increase in active ovens may be considered permanent, and an advance in price the first of April will undoubtedly take place. Report has it that the Edgar Thomson paid $1.25 all last year. They being interested in one of the largest plants, this was probably considered the inside track in view of the declared purpose to advance to $1.50.

CINCINNATI PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers, Brown & Co.

There is little change to note in the week closing The volume of business is well maintained, several large orders having been placed since Feb. 1st. There is, however, a good deal of pressure to sell from some furnaces both in Northern and Southern districts, and under this competition between sellers, prices have been forced down 25 to 50 cents on a ton on some kinds since the first of the year. On other kinds, however, prices are firm, and sales are made at 50 cents per ton advance. A good many furnaces began the year intending to run through if prices picked up a little, and to stop if they did not. It looks as if another month would see the number of producers still further cut down. Demand is, on the whole, improved but is still much restricted. We quote for cash (Feb. 9):

HOT BLAST FOUNDRY IRON.—Ohio and Southern Strong Coke, No. 1, $17 25@$17 75; Ohio and Southern Strong Coke, No. 2, $16 00@$16 50; Ohio and Southern Strong Coke, No. 3, $15 00@$15 50; Ohio Soft Stonecoal, No. 1, $17 00@$18 50; Ohio Soft Stonecoal No. 2, $16 50@$17 50. CHARCOAL IRON.—Hanging Rock, No. 1, $20 00@$22 00; Hanging Rock No. 2, $19 00@$20 00; Tennessee and Alabama, No. 1, $18 50@$19 50; Tennessee and Alabama, No. 2, $17 50@18 50;—FORGE.—Strong Neutral Coke, $14 50@$15 00; Mottled Coke, $13 50@$13 50; Cold Short Coke, $14 00@$14 50. CAR WHEEL MALLEABLE.—Southern Car Wheel Iron, $22 00@$24 00; Hanging Rock Cold Blast, $25 00@$27 00; Hanging Rock Warm Blast, $20 00@$23 00; Lake Superior Malleable, $23 00@$24 00.

Reported for the IRON TRADE REVIEW by E. L. Harper & Co.

Business continues fairly active. The purchases since the first of January have far exceeded the make of crude iron. Stocks in the hands of the coke furnaces have been largely reduced, and many of them exhausted. Some of the furnaces are well sold up into the future. Charcoal irons not having declined to the relative place coke iron have touched, are less active comparatively. General business is improving, and the outlook for a healthy Spring trade more favorable. We quote (Feb. 9):

FOUNDRY.—Hanging Rock Charcoal, No. 1. $20 00@$21.00; Hanging Rock Charcoal, No. 2, $19 00@$20 00; Strong Neutral Coke, No. 1, $16 75@$17 50; Strong Neutral Coke, No. 2, $15 50@$16 25; American Scotch, No. 1, $16 50@$17 00; GRAY FORGE.—Neutral Coke, $14 00@$14 50; Cold Short, $14 00@$14 50; CAR WHEEL AND MALLEABLE—Hanging Rock, Strictly Cold Blast, $25 00@$25 50; Hanging Rock, Warm Blast, $22 00@$22 50; Southern Cold Blast $22 00@$23 00; Amherst Virginia Warm Blast, $21 00@21 50; Lake Superior, Charcoal all grades, $21 50@$22 00; cash.

LOUISVILLE PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Geo. H. Hull & Co.

The market continues quiet, and considerable reasonable-sized orders are being booked at prices that indicate a little better feeling. We quote for cash in round lots as below (Feb. 11):

PIG IRON.—Southern Coke, No. 1, Foundry, $16 50@$17 50; Southern Coke, No. 2, Foundry, $15 50 @ $16 50; Hanging Rock Coke, No. 1, Foundry, $16 00@$17 00; Hanging Rock Charcoal, No. 1, Foundry, $21 00@$21 50; Southern Charcoal, No. 1, Foundry, $18 00@$19 00; Silver Grey, different grades, $15 00@$16 00; Southern Coke, No. 1, Mill Neutral, $13 50@$14 50; Southern Coke, No. 2, Mill, Neutral, $13 00@$13 50; Southern Coke, No. 1, Mill, Cold Short, $13 00@$13 50; Southern Charcoal, No. 1, Mill, $16 00@$17 00; White and Mottled, different grades, $12 00@$13 00; Southern Car Wheel, Standard Brands, $25 00@$26 00; Southern Car Wheal, other brands, $20 00@$22 00; Hanging Rock, Cold Blast, $24 00@$25 00; Hanging Rock, Warm Blast, $20 00@$21 50.

INDUSTRIAL NOTES.

Continued from page 103.

has been one of the strongest competitors that the Diamond Co. has had in this country.—[Akron Beacon.

*** THE Berea Stone Co. have started up their whetstone works, turning lathe, and grindstone frame manufactory in the foundry building, and are running a full force of men. The old foundry building is lively these days.—[Berea Advertiser.

*** THE Canton Stove Co. has been incorporated by Henry Wernet, Gottleib Rheim, John Ehman, Martin Englehart and Frederick Heingartner. The capital stock is placed at $10,000; $7,000 will be taken by promoters of the project, leaving $3,000 to be subscribed by citizens.

*** A SYNDICATE of the grindstone manufacturers of Northern Ohio and Michigan has been formed. Mr. Geo. Worthington is the President of the new company, and Mr. Wm. McDermott Vice President and Secretary. All orders for stone will be referred to the new company who will apportion them among the firms, composing the syndicate.

*** TAPLIN RICE & Co., Akron, have been closed in their stove department for a few weeks on account of repairs and the annual inventory. They report a good supply of goods on hand carried over in preference to making bad accounts for them. The pattern shop is now busy upon some new and striking designs for the 1885 trade.—[Stove & Hardware Reporter.

*** FIRES: Ornamental Iron Works of Henry Hodges & Co.; loss $1,000. Norfolk, Va.—Rolling and plate mill of the Nashua (N. H.) Iron and Steel Co. Contained valuable machinery, together with an engine thoroughly equipped for manufacturing steel plates. Loss, $50,000; fully insured.—Machine shop of the Burlington & Northwestern Narrow Gauge Railroad, at Burlington, Ia.

New York, Pa. & Ohio Railroad.

New York, Boston and the East.

The shortest and quickest route to Pittsburg, Washington, Baltimore and the Southeast.

Central or Ninetieth Meridian time, 33 minutes slower than Cleveland city time.

On and after Sunday, November 16th, 1884, trains will leave from the new Central Depot, South Water Street and Viaduct, as follows:

7 20 A. M. ATLANTIC EXPRESS—daily—Pullman Sleeping Coaches from Leavittsburg, 9:10 a. m. to New York, and Pullman Sleeping and Hotel Coach from Leavittsburgh to Albany and Boston without change. Arrive at Meadville at 11:25 a. m. (dinner); Franklin 12:08 p. m., Oil City, 12:30 p. m., Corry 1:14 p. m., Jamestown, 2:12 p. m., Buffalo, 5:50 p. m., Niagara Falls, 8:15 p. m., Rochester, 8:20 p. m., Hornellsville, 6:00 p. m. (supper); Corning, 7:25 p. m., Elmira, 8:05 p. m., Binghampton, 10:05 p. m.; Albany, 5:00 a. m.; Boston, 2:05 p. m.; arriving at New York, 6:15 a. m.

7:20 A. M. PITTSBURG EXPRESS, —(daily) through without change. Arrives at Youngstown, 9. 55 a. m.; Sharon, 10:55 a. m.; Sharpsville, 11:05 a. m.; Pittsburgh, 12:45 p. m.

2 30 P. M. LIMITED EXPRESS—Daily—Through Pullman Buffet Sleeping Coach from Cleveland to New York. Arrives at Meadville at 6:30 p. m., Jamestown, 8:47 p. m.; Salamanca, 9:45 p. m.; New York, 10:25 a. m.

2:30 P. M. PITTSBURG, WASHINGTON AND BALTIMORE EXPRESS.—daily—Through without change. Arrives at Youngstown at 5:00 p. m.; Pittsburg, 8:00 p. m.; Washington, 7:09 a. m.; Baltimore, 8:19 a. m.

4:00 P. M. MAHONING ACCOMMODATION—Daily except Sunday. Stopping at all way stations, arriving at Youngstown at 6:55 p. m., Sharon, 7:50 p. m.; Sharpsville, 8:00 p. m.

11:00 P. M. NIGHT EXPRESS, (daily except Sunday). Sleeping Coach from Cleveland to Hornellsville. Arrive at Meadville, 3:25 a. m.; Corry, 4:59 a. m.; Jamestown, 5:57 a. m.; Salamanca 7:10 a. m. Buffalo, 9:20 a. m.; Niagara Falls, 11:50 a. m., Rochester, 12:58 p. m., Hornellsville, 11:00 a. m., Corning, 12:07 p. m., Elmira 12:40 p. m., Binghampton, 2:19 p. m., New York, 9:10 p. m.

11:00 P. M. PITTSBURGH WASHINGTON AND BALTIMORE EXPRESS. — Wagner Sleeping Coach Cleveland to Pittsburgh without change. Arrive at Youngstown at 2:00 a. m., Pittsburgh at 5:55 a. m., Washington 7:30 p. m., Baltimore 8:30 p. m.

Trains arrive at Cleveland at 6:20 a. m., 10:08 a. m., 12:50 p. m., 6:15 p. m.

☞This is the only route by which passengers can reach Corry, Elmira, Binghampton, New York City, and intermediate points WITHOUT CHANGE. No change to Boston and New England cities.

Baggage Checked through to all Points East.

Through tickets and information regarding the route can be obtained at the office, 131 Bank street, and at new Depot of New York, Pennsylvania and Ohio Railway, South Water street and Viaduct, Cleveland.

A. E. CLARK,
Gen. Pass. Agt., Cleveland Ohio.
M. L. FOUTS, Passenger Agent,
131 Bank street, Cleveland, O.

WHEELING & LAKE ERIE

—AND—

CLEVELAND & MARIETTA R. R'S.

TIME TABLE—IN EFFECT JANUARY 20, 1885.

Central Standard Time.

EASTWARD.	No. 3.	No. 5.*	No. 7.	No. 1.*
Toledo.....lv	8 00 AM	3 20 PM	6 10 PM	.....
Oak Harbor...ar	8 55	4 18	7 05	.....
Fremont.....	9 23	4 45	7 30	.....
Clyde.....	9 39	5 03	7 45	.....
Bellevue	9 53	5 20	8 02	.....
Monroeville ..lv	10 10	5 40	8 20	1 40 AM
Norwalk lv	10 25	6 05 *	8 35 PM	1 55
Wellington	11 13	6 52	No. 39	2 37
Creston.....lv	12 00 PM	7 40	1 13 PM	3 20
Orrville.....ar	12 30	8 10	1 43	3 50 *
Orrville.....lv	12 50	8 20	1 43	7 00
Massillon.....ar	1 30	9 00 PM	2 25	7 40
Mass'lon.....lv	2 30	4 30	2 30	7 40
Sherrodsville ..	.....	6 45	6 45 PM	.....
Valley Junc..lv	3 30	.....	3 30	8 35
Canal Dover.....	3 55	.....	3 55	9 00
New Comerst'n	4 55	No. 9.	4 55	9 50
Cambridge	6 03	6 50 AM	6 03	10 55 AM
Macksburg	8 00	8 55	8 00	.....
Marietta.....ar	9 20 PM	10 20 AM	9 20 PM	.....

WESTWARD.	No. 6.	No. 8.		
Marietta lv	6 00 AM	2 30 PM	.....	.....
Macksburg	7 20	3 50	.....	.....
Cambridge.....	9 15	5 58	.....	.....
New Comerst'n	10 20	7 03	.....	.....
Canal Dover.....	11 10	7 55	.....	No. 38.
Sherrodsville...	.....	.....	.....	5 45 AM
New Cumberl'd	.....	.....	.....	6 05
Valley June.....	11 50	8 25	No. 4.	6 45
Massillon.....	12 35 PM	9 10	8 20 AM	8 15
Orrville	1 15	10 00 *	9 00	10 15
Creston.....ar	1 45	10 30	9 32	11 15 AM
Creston..... lv	1 45	10 30	9 32	.....
Wellington	2 30	11 13	10 20	No. 2.*
Norwalk.....	3 20	11 55	11 20	7 35 AM
Monroeville	3 32	12 10 AM	11 30	7 45
Bellevue.....	3 48	*	11 45	8 02
Clyde	4 03	.....	12 00	8 20
Fremont.....	4 20	.....	12 17 PM	8 40
Oak Harbor.....	4 45	.....	12 42	9 00
Toledo .....ar	5 45 AM	.....	1 35 PM	10 00 AM

27.	29.		Huron Branch.		26.	28.
A. M.	P. M.				A. M.	P. M.
11 50	6 45	.....	ar..... Huron..... lv	.....	6 40	2 20
11 35	6 30	.....	...Fries Landing.....	.....	6 53	2 33
11 20	6 15	.....	.....Milan.....	.....	7 07	2 50
10 55	5 55	.....	lv...Norwalk.....ar	.....	7 27	3 10

* Daily.

M. D. WOODFORD, Gen'l. Manager.
JAMES M. HALL Gen'l Pass. Agt. Toledo.

STREET LIGHTS.

H. S. BELDEN. B. C. GOODWILL.

Belden Burner Co.,

Manufacturers of

Vapor Gas Lights

—AND—

Contractors for the Lighting of Streets of Cities and Towns.

148 SOUTH MARKET STREET, CANTON, OHIO.

WE MANUFACTURE **Street Lanterns** for the use of Gasoline, Gas or Carbon Oil; also Gasoline Fixtures to attach to and take the place of gas or carbon oil fixtures for in-door use, or for Lanterns in Street Lighting.

Established 1881.] THE MERCANTILE AGENCY. [105 Branch Offices.

R. G. DUNN & COMPANY Proprietors.

This establishment supplies (to subscribers only) all necessary information as to the standing, responsibility, etc., of merchants, traders, manufacturers, public companies, etc., through the United States, their Territories, and British North America. Also, makes collections and attends to legal business generally. It is the oldest and by far the most complete and extensive ever organized for the accommodation of banking and mercantile interests and for the general promotion and protection of trade. Reference books published quarterly. Cleveland Office—Rooms 73 to 80, Wilshire Building, 209 Superior St. Terms of subscription made known on application. **R. P. CATTRALL, Manager.**

Specially Designed for the Western Market

OVEN NO 8—20x21½x13 inches. OVEN NO. 9—22x23½x14 inches

Has peculiar and important features that make it the best operating stove in the market, and commend it to the favorable notice of dealers who desire a first-class stove.

It is constructed with our patent flue, which descends in the rear and ascends in front between oven and fire-box, forming a wide flue around back, bottom and front of oven, ensuring an easy draft and uniform heating of all parts of oven.

The Reservoir is of planished copper, with deep, stamped pit, protected with cast iron, and is effectually heated without an extra damper. By removing Reservoir and supplying its place with cover plates, a complete six-hole stove is obtained.

The fire-back is in three heavy interchangeable pieces. A water-back is provided which occupies the same space as fire-back, heats perfectly and does not retard the heating of oven, for reasons of the intervening flue between it and oven.

The grate is hinged at its extreme back edge, and when dumped gives a clear opening into a large ash-pan. It can be partially dropped to remove clinkers from the front.

A receptacle for the covers, when removed from top of stove, is hung on swing bracket under front hearth.

Its neat design, nicely polished edges, nickeled panel plates and trimming to give it a very attractive appearance.

Send for prices.

—MANUFACTURED BY—

Taplin Rice & Co

AKRON, OHIO. 1

Iron Clad Paint Co.

Order direct from the **Iron Clad Paint Co.,**

Factory 75 & 77 Central Way. Sec. & Treas. No. 3 Case Building.

CLEVELAND, OHIO.

Trade Mark Patented—Paint Patented

And get the genuine article, and save liability of suit for using an article made in violation of the patents issued to Wm. Green and now owned by this Company.

IRON CLAD PAINT is the most durable, most fire-proof, and Cheapest Paint made.

FURNISHED both Dry and Ground in Oil.

Used by Nearly all the Railroads. 63

Bee Line.

Cleveland, Columbus, Cincinnati & Indianapolis Railway.

THE GREAT CENTRAL TRUNK ROUTE to the Ohio and Mississippi Rivers.

THREE TRAINS WEEK DAYS

TWO TRAINS SUNDAYS.

Leave Cleveland with Through Palace Coaches and Elegant Sleeping Cars for

Columbus, Cincinnati, Indianapolis, Terre Haute and St. Louis

Without Change.

This is the only line making Direct Connection with all the principal Trunk Lines of the East for all Southern, Southwestern and Western points, either by way of Cincinnati, Indianapolis or St. Louis for all railway towns in Missouri, Arkansas, Texas, Kansas, Nebraska, Colorado, New Mexico, Old Mexico and the Pacific Coast.

Equipment New and Comprising all Modern Improvements.

THE BEST ROADBED AND SAFEST ROAD IN THE WEST.

Tickets by this popular route for sale at all regular ticket offices.

E. B. Thomas, General Manager. **O. B. Skinner,** Traffic Manager.

A. J. SMITH,
Gen'l Pass. Agent, CLEVELAND, O.

THE NICKEL PLATE.

New York, Chicago and St. Louis Railroad.

The Passenger Equipment of this New Trunk Line is all new and is supplied with the latest appliances necessary to safe, speedy and comfortable travel.

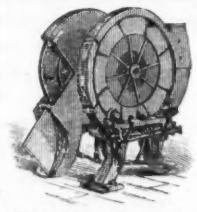
Trains depart from and arrive at Union Railway Depot, Van Buren street, Chicago, and N. Y., L. E. & W. Railway Depot at Buffalo.

Following is time in effect October 6th, 1884, and until further notice:

GOING EAST.			GOING WEST.	
a.m. Lv.			Ar.	p.m.
.....	7 50	Chicago	7 50	.....
.....	9 45	Valparaiso	5 42	.....
	p.m.			
.....	1 50	Fort Wayne	1 50	.....
.....	2 05	New Haven	1 35	.....
			a.m.	
.....	3 56	Leipsic	11 30	.....
.....	4 49	Arcadia	10 34	.....
a.m.				p.m.
6 50	5 00	Fostoria	10 22	8 50
7 35	5 45	Green Springs	9 44	8 05
8 15	6 20	Bellevue	9 10	7 35
10 49	9 02	Ar. Cleveland Lv.	6 45	5 01
p.m.				
12 05		Painesville	.....	3 44
12 58		Ashtabula	.....	2 51
1 42		Conneaut	.....	2 20
2 41		Erie	.....	1 23
				a.m.
4 19		Dunkirk	.....	11 24
				a.m.
5 55	Ar.	Buffalo Lv.	.....	9 50

Through Tickets to all points are on sale at principal offices of the Company at lowest rates for any class of tickets desired. Baggage checked to destination.

B. F. HORNER,
General Passenger Agent.
LEWIS WILLIAMS,
General Manager, Cleveland, O.



Fan & Stave Jointer.

BARREL, KEG, Hogshead AND Stave Machinery

E. & B. HOLMES, Buffalo, N. Y.

Stearns Mfg. Co.

ERIE, PA.,

Engines from 15 to 400 Horse Power

Boilers of Steel and Iron

Supplied to the Trade or user. Send for Catalogue

Saw Mill and General Machinery.

8 **WORKS AT ERIE, PA.**

CLEVELAND WHOLESALE PRICES.

The lowest quotable prices are given.]

HARDWARE.

Adzes.

Carpenter's 1st quality.....℗ doz $24 00
" 2d " .....℗ doz 21 00
Ship plain.....℗ doz 25 00 } Less
Ship. lipped.....℗ doz 30 00
Heavy railroad.....℗ doz 26 00

Animal Pokes.

Akron $3 50
Berea, per doz..... 4 00
Eagle, per doz..... 5 00

Anvil Vise and Drill.

Millers Falls Co. $18.....dis 20
Cheney Anvil and Vise.....dis 25 and 2

Apple Parers.

Reading, per doz..... $7 00
Turn Table..... 4 50
White Mountain..... $6 00

Augers and Bits.

First Quality.....dis 60@60&10
Cook's Douglass Mfg. Co .....dis 40&10&10
Expansive Bits, Clark's small, $18; large, $26.....dis 25 & 10
Expansive Bits, Derby, $17 and $26.....dis 40&10
Hollow Augers, Ives' ..... } dis 25
Hollow Augers, French, Swift & Co..... }
Hollow Augers, Bonney's Adjust. ℗ doz. $48.....dis 40&10
Hollow Augers, Stearns' Adjust. ℗ doz.. $48.....dis 20&10
Holtz Bit Stock Drills.....dis 25&10
Ship Augers .....dis 15
C S cut augers .....dis 60
do do do bitts..... 60
D C gimlet do Ives.....dis 50
Snells bitts.....dis 60
Russell Jennings' augers, new list.....dis 25
Bit stock drill, Morse .....
Machine bits 10 in twist.....
Gimlet bits.....

Awls, Brad Sets, &c.

Awls, Sewing, Common...℗ gross $1.70—dis 25&10
Awls, Shouldered Peg.....℗ gross 2.45—dis 25&10
Awls, Patent Peg.....℗ gross 63c—dis 25&10
Awls, Shouldered Brad...$2.70 ℗ gross—dis 25&10
Brad Sets, No. 42, $10.50; No. 43, $12 50.....dis 70&10&5
Brad Sets, Stanley's Excelsior, No, 1, $7.50.....dis 25&10
Handled brad awls per gross $ 7 50.....dis 25&10
" scratch " " " 7 50..... " 25&10
Socket " " " " 1 50..... " 10&10

Awl Hafts.

Brass ferrule, sewing.....℗ gross $3.50, dis 40&10
Short, patent sewing.....℗ doz $1.00, dis 40&10

Axes.

Regular.....℗doz $6 50@$7 00
Double steel, bronzed.....add 75
Triple steel, bronzed.....add 1 00
Steel pole, bronzed.....add 1 00
Full polished.....add 50

Double Bit Axes.

Regular, bronzed.....℗ doz $12 00
Steel pole, bronzed.....add 1 00
Full polished.....add 1 00
tandard list,.....

Axles.

Nos. 1 to 6, 60 off
Nos. 7 to 14, 60 and 5 off
Nos 15 to 18, 60 off
Nos. 19 to 22, 60 and 10 off

Axle Grease.

Frazier's, per gross..... $10 00
Common, " 6 00
Mica.....
Paragon.....

Balances.

Spring balances.....dis 40

Barb Fencing.

Official List—Prices to dealers.

Galvanized. ℗ ℔..... 5¾
Japanned or red-painted, ℗ ℔..... 4⅝
Fence Staples, galvanized..... 6
Fence Staples, plain..... 5

Bells.

Hand, light Brass.....dis 75&10@75&10&5
Hand, Extra Heavy.....dis 60@65
Hand, White Metal.....dis 70
Hand, Silver Chime.....dis 20&10
Hand, Globe (Cone's Patent).....dis 25&10
Gong, Abbe's.....dis 20&10&5
Gong, Yankee.....dis 30&10&5
Gong, Barton's.....dis 30&10&5
Swiss land.....
Western cow.....
Gong, trip.....

Blind Fasteners.

Mackrell's.....℗ doz. pairs, $1,00—dis 20&10
Van Sand's Screw Pattern.....$9.00 ℗ gross—dis 20
Van Sand's Old Pattern.....$9.00 ℗ gross—dis 20
Washburn's Old Pattern.....$9.00 ℗ gross, net
Merriman's.....new list, net
Salisbury & Austin No, 2008.....$9.00 ℗ gross, net
Security Gravity.....$9.00 ℗ gross, net

Bit Holders.

Barber's extension.....℗ doz $15 00, dis 40&5
Angular .....℗ doz $15 00, dis 40

Blind Staples.

Barbed ½ inch and larger..... 10½c net
Barbed ⅝ inch and larger..... 11¾c net

Bolts.

Carriage com. new list..... 75
Tire, common, new list..... 65
Eagle carriage bolts..... 70
Philadelphia Pattern carriage and tire.....
Patent door bolts, mortise.....discount 55&10
Stove bolts..... 50
Plow bolts..... 40
Machine ..... 75& 10
Cast iron barrel bolts..... } 55 and 10
Wr't " " " ..... } 55 and 10
Cast iron chain bolts..... } 65 and 10
Wrought iron square bolts..... } 55 and 10
Wrought shutter bolts..... } 55 and 10
Ives patent door bolts..... } 50
Sargent's list }
Bolt Ends 16c. ℗ ℔. dis..... 75
Cast Iron Barrel Shutters, etc.....dis 55 and 10

Boring Machines.

	Upright	Angular
First quality, no augers.....	$5 50	$6 75, dis 50
Phillips, ...	7 00	7 50, net

Saunder's Automatic.....

Brackets.

Plain Shelf..... dis 50&10
Fancy ..... dis 60&10

Braces.

Q. S. Backus .....discount 50 and 5
Barber's.....discount 40 and 5
Spoffard's Patent.....discount 50 and 5
Common Ball, American.....discount 55

Bright Wire.

Nos. 0 to 2.....	10	Nos. 13 and 14.....	12¼
" 3 to 9.....	10	" 15 and 16.....	14
" 10 and 11.....	11	" 17.....	15
" 12.....	11½	" 18.....	16

Full bundles } Bright dis 65 ℗ ct, annealed
} Cop'd, " 60 ℗ ct,
Broken bundles } Bright dis 60 ℗ ct, annealed
} Cop'd, " 55 ℗ ct.

Fence Wire..... 3¾
Fence staples, plain..... 4½
Fence staples, galvanized..... 5¼

Bright Wire Goods.

Screw hooks & eyes and gate hooks & eyes
List June 5th, 1883..... 70 and 10

Butts.

	Discount
Wrought brass.....	75
Cast, loose joint.....	60 and 10
Pin, loose.....	60 and 10
Narrow, fast joint.....	60 and 10
Broad, fast joint.....	60 and 10
Loose joint.....	70
Loose joint, jap.....	70
Loose joint, jap. with acorns.....	70
Loose pin, acorns.....	70
Loose pin, japanned acorns.....	70
Loose pin, acorns, japanned, plated tips.....	70
Wrought iron—	
Wrought, fast joint narrow.....	60
Wrought, fast joint broad.....	60
Wrought loose joint broad.....	60
Wrought table and back flaps.....	60
Table Butts, back flaps, etc.....dis 60&2½&10	
Regular inside blind.....dis 60&2½&10	
Light inside blind.....dis 60&2½&10	
Wrought loose pin.....dis 67½&10	
Light loose pin.....dis 60&2½&10	
Snepard's blind butts.....	75
Spring hinges.—	
Spring and blank butts.....	33½
Am. Spring Hinge Co.....	30
Gem spring hinges.....	30

Can Openers.

Sprague No. 1 $2.00, 2 $2.25, 3 $2.50, dis 50 & 10

Caps—Percussion, ℗ 1000.

Hicks & Goldmark's
F. L. Waterproof, 1-10's .....50c } dis 10 & 10
E. B. Trimmed Edge, 1-10's .....65c }
E. B. Ground Edge, Central Fire, 1-10's 70c }
Double Waterproof, 1-10's .....1.40 }
Pistol Waterproof, 1-10's.....75c }
Musket Waterproof, 1-10's .....80c }
G. D.....33c discount 10
Double Waterproof, in 1-10's .....1.40 } dis 10
Colt's Pistol, in 1-10's.....75c }
Elys waterproof in 1-10's.....60c, net

Cards.

Horse and Curry..... dis 10

Carpet Stretchers.

Bullard's..... $4 50 ℗ doz net

Carpet Sweepers.

Queen.....℗ doz $16.00
Castle.....℗ doz $24.00

Cartridges.

Rim..... List of Jan. 1, 1884—discount 50 and 10
Central Fire, " " .....discount 33⅓c

Casters.

Bed..... }
Plate.. ..... } dis 50@55
Shallow Socket..... }
Deep Socket..... }
Yale Casters, reduced list May, 1884, dis 25@25&10
Martin's new list.....dis 40&10
Payson's Anti-friction .....dis 50

Chains.

Coil by cask.....

3-16	¼	5-16	⅜	7-16	½
9	7½	6-15	560	5-10	495
9-16	⅝	¾	⅞	1	

Trace, 6½–10–2.....℗ pair 79c }
Trace, 6½–10–3.....℗ pair 70c } dis 45@45&5
Trace, 7–10–2.....℗ pair 86c }
German Halter Chain, list of June, 1884, dis 55@55&5
German Coil, list of June, 1884.....dis 55@55&5
Galvanized Pump Chain.....℗ ℔ 7c
Jack Chain, Iron.....dis 70
Jack Chain, Brass.....dis 65&10

Chalk.

White .....℗ gross 60c net
White Crayon ..... 12½c net

Chisels.

Socket Firmer & Framing, L. & I. J. White..... dis 25 & 5
Tang Firmer..... 25 & 5
Socket Framing, Arlington Edge Tool Co } dis
Socket Corner..... } 70&10
Socket Firmers, Arlington Edge Tool Co.. }
Socket Framing and Firmer. Buck, Bros.....dis 30
Tanged Firmers.....dis 45@45&5
Socket Firming & Firmer. P. S. & Co.....70

Cheese Knives.

Enterprise self-weight ..... dis 25

Clamps.

Snow's adjustable, iron ..... dis 40&5
Hammer's adjustable, iron..... dis 15
Sargent's cabinet, iron ..... dis 70&10

Cleveland Stamped Elbows.

Genuine Russia Iron.

4½ inch, per doz..... 5 50
5 do do 7 50
6 do do 9 50
7 do do 11 00
Columbus elbows.....

Cocks, Brass.

Racking.....dis 60
Globe.....dis 60
Plain Bibbs.....dis 60
Ale and Beer.....dis 60

Coffee Mills.

Enterprise.....25

Compasses, Dividers, &c.

Compasses.....dis 60
Calipers.....dis 60
Dividers .....dis 60
Bemis & Call Co.'s Dividers.....dis 60&5
Bemis & Call Co.'s Compasses & Calipers..dis 50&6
Bemis & Call Co.'s Wing & Inside or Outside.....dis 50&5
Bemis & Call Co.'s Double.....dis 60
Bemis & Call Co.'s (Call's Patent Inside).....dis 30
Excelsior .....dis 50
Cook's Extension.....dis 25
J. Stevens & Co.'s Calipers and Dividers.....dis 25&(0

Coopers' Tools.

Bradley's.....discount 15 and 20
Braton's.....discount 15 and 20
L. & I. J. White.....20 & 5

Corn Knives.

Corn knives, regular and reverse edge.....

Crowbars.

Cast steel.....℗ lb 5
Iron, steel points..... 4½

Curry Combs.

Fitch's.....dis 50&10
Hotchkiss.....dis 33⅓
Rubber.....℗ doz. $1.00, dis 25

Cutlery.

American Pocket.....net list
do Table..... do do
Forks Al Rogers & Bro.....dis 50 & 5

Dog Collars.

Embossed gilt.....dis 30&10
Leather.....dis 40

Door Hangers.

Parlor Door.

The Architect Parlor Door Hanger..... $6 00
Warner 6 00
Munger..... 3 50
Richard's Parlor Door Hanger..... 6 00
Discount, 20&10 ℗ cent.

Barn Door.

" Climax" anti-friction ..... dis 55
Kidder's ..... dis 50&5
U. S., wood track, ℗ dozen pair, 4 in. $12 00; 5 in $15 00..... dis 60&10
Check-Back Hangers..... dis 70
Terry's.....

Door Springs.

Torrey's Rod, regular size.....℗ doz $3.00 dis 50
Gem (Coil);
No. 1, Large Japanned...℗ doz. $4.00 }
No. 2, Medium Japanned..℗ doz 2.75 } dis 50&10
No. 3, Small Japanned.....℗ doz 2.00 }
No. 5, Screen Door size,.....℗ doz. 2.00 } dis.
No. 6, Medium.....℗ doz. 2.75 } 60c
No. 7, Large.....℗ doz. 4.00 }
Cop'd screen door.....

Drawing Knive .

Peck, Stow & Wilcox..... .....discount 70
Adjustable handle.....20
L. & I. J. White.....dis 20 & 5

Drills and Drill Stocks.

Blacksmiths' each.....$2.50 discount 10
Blacksmiths' self-feeding, each...$7.50 discount 20
Breast, P. S. & W .....discount 20 & 10
Blacksmiths'.....each, $2.50, dis 20
Blacksmiths' Self-Feeding.....each, $7.50, dis 20
Breast, P. S. & W .....discount 20&10
Breast Hotchkiss'.....discount, 20
Breast, Millers Falls.....each, $3.00 discount 25
Ratchet, Weston's..... 20
Automatic Boring Tools...each, $2.25, discount 20

Drill Chucks.

Morse's Beach Patent.....each, $8.00, discount 20
Morse's Adjustable.....each, $7.00, discount 20

Drive Well Points.

Association list..... dis 25

Egg Beaters.

Dover.....℗ doz. $2.50
Acme .....dis 50
Medallion .....℗ doz. $4.50, dis 33⅓

Enameled and Tinned Ware.

Kettles.....discount 50
Sauce pans.....discount 30
Tinned Sauce Pans.....discount 30

Escutcheons.

Door Lock.....Same discounts as Door Locks
Brass Thread.....dis 55
Wood.....dis 25

Escutcheon Pins.

Brass..... dis 60

Farrier Knives.

Wostenholm.....

Faucets.

Frary's Patent Petroleum.....dis 40@40&5
Cork Lined.....dis 70
Stebbin's pat. molasses gate.....
Enterprise, self-measuring, each.....

Files.

Heller Bros.' Horse Rasps.....discount 35
Nicholson.....discount 60
Grobets swiss } all fancy { 20
Nicholson XF } 15
Stubs Eng } 20
Western Files..... 60
Kearney & Foot..... 50&10

Fluting Machines.

Eagle 3½ inch.....$2.15, dis 35
Geneva Hand Fluter, White Metal..
℗ doz. 12.00.....dis 25
Shepard hand, Nos. 85 $15, 95 $6.50, 110 $8.75

Forks

Hay, Manure and Spading.....dis 55

Gauges.

Marking Stanley's .....dis 55&10

Gimlets.

Nail and Spike.....dis 50&10
" Eureka" Gimlets.....dis 40&10
" Diamond" Gimlets.....dis 40&10
Double Cut, Shepardson's.....dis 40
Double Cut, Ives'.....dis 45&10
Double Cut, Douglass'.....dis 40
" Bee".....℗ gross $12, dis 25

Glue Pots.

Tin enameled..... dis 30
Family, Howe's..... dis 30

Grindstones.

Berea.....1 @ 1½ ℗ ℔
Lake Huron.....1 @ 1¼ ℗ ℔

Grindstone Fixtures.

Sargent's ..... dis 70&10

Hack Saws.

Griffin's Hack Saws, complete.....dis 40&10
Griffin's Hack Saw, Blades only.....dis 20&10
Star Hack Saws and Blades.....dis 25

Hammers.

Maydole's.....discount 15
Magnetic Tack, No. 1, 2, 3, $1.25, $1.50 and $1.75, ...discount 25 and 10
Atha Tool Co.....
Warner & Noble's.....discount 5
Steel, Drilling..... 15
Steel, Striking..... 15
Steel, Mason's 20
Steel, Faced 10½
Turning, each 2 25
Maydole's.....discount 15
Kip's new list..... " 30 ℗ ct

Handles—

Door or Thumb Latches.

Per doz	Nos. 0	1	2	3	4	
Sargent's	80	1 00	1 18	1 35	1 50	dis 60&1

Roggin's Latches.....℗ doz. 35c@40c net
Bronze Iron Drop Latches.....℗ doz. 70c@80c net

Hand Corn Shellers.

Eagle.....each $7.00

Hangers.

Barn Door, old patterns.....dis 60&10
Barn Door, New England.....dis 60&10&10
Climax (Anti-Friction).....dis 55
Zenith Anti-Friction Wood Track.....dis 55
Reed's Steel Arm.....dis 40
Challenge .....dis 50
"Champion" Medina Mfg. Co.....$15.00, dis 50&10
Sterling Improved (Anti-friction).....dis 65&10
Double Cut Hartwell's.....dis 40&10
Victor, No. 1, $15; No.2, $16.50; No. 3, $18..dis 33⅓
Cherritree.....dis 50
Kidder's.....dis 50&10
U. S.....4 in., $12; 5 in., $15, dis 60
The "Boss".....dis 50&10
Terry's Patent.....5 in., 12.00; 3½ in., 10.00, dis 40
Cronk No. 4, 12.00; No. 5, 14.40; No. 6, 18.00, ...dis 50&5
Architect.....℗ set 6.00, dis 20
Eclipse.....dis 20&10
Felix.....℗ set 4.50, dis 20
Hamilton Wrought.....dis 50
Hunt's..... 30

Harness Snaps

German, old list .....dis 75
Covert, New Patent, new list.....dis 35
Meneely's Pat. Safety (Old German list).....dis 50

Hatchets.

Shingling—

Nos.	1,	2,	3,	
℗ doz.	$7.50,	$8.00,	$8 50,	discount 40

Claw.

Nos.	1,	2,	3,	
℗ doz.	$7.75,	$8.50,	$9.25,	discount 40

Lathing,

No.	1,	2,	3,	
℗ doz.	$7.50,	$8.25,	$9.00,	discount 40

Hunter's Hstchehs ℗ doz $9.00.....dis 35

	1	2	3
1st quality Shingling & Half-bronzed	$8 00	8.50	9.00
2d " " "	7.00	7.50	8.00

1s5 " claw add $1.00 dez. to list
Underhill & Hames shingling and half lath Discount.....
Hurd's Razor blade shingling and lathing 7.25, 8.00, dis 30 and 10

Hay Knives.

Lightning.....per doz. net $18
Heath Electric.....℗ doz $13.50, net

Hinges.

Screw and Strap 6 @ 12 inches.....4c
Screw and Strap 14 inches and larger.... ..... 3c
Strap and T Hinges.....60 and 10
Screw, hook and strap, 8 10 12 in..... 4½ net
14 so 36 in..... 3½ net
Hook & Eye hinges ¾ to 1 in. 6 }
⅝ in. 7 } ..... net
½ in. 9 }

Hoes.

Riveted Shank.....dis 50&10
Socket.....dis 50&10
Planters' .....dis 50&10

Hollow-Ware.

Stove Hollow-Ware, Ground.....dis 60
Enameled and Tinned Hollow-Ware
Kettles.....dis 50&10@50&10&5
Oval Boilers, Saucepans and Glue Pots.....dis 40
Gray Enameled Ware.....dis 55
Rustless Hollow-Ware.....dis 50 & 5
Galvanized Tea-Kettles

Inch	6	7	8	9
Each.....	45c	50c	55c	65c

Hooks, Hasps and Staples.

Discount 70&10&7½

Hooks.

Bird Cage, Sargent's list.....dis 60&10
Belt.....dis 80
Clothes Line Sargent's list.....dis 65&10
Ceiling Sargent's list.....dis 60&10&10
Coat and Hat. Sargent's list.....dis 60&10&10
Wire Coat and Hat, Gem.....dis 45
Picture Hooks Brown's Pat. Solid Brass, $4.00 ℗ gross.....dis 55
Wrought Staples and Hooks & Staples.....dis 70&7½&10
Wrought Staples, Stanley's list.....dis 70&7½&10
Wire Screw Hooks and Screw Eyes.....dis 75&10
Hooks and Eyes—Malleable Iron.....dis 60&10
Hooks and Eyes—Brass.....dis 60&10

Horse Nails.

No.	10	9	8	7	6	5
Putnam, ℗ ℔.....	19	20	21	22	24	27
Ausable chasm, ℗ ℔...	23	24	25	26	28	31

	No. 4	3	2
Ausable chasm.....	40	60	90
Putnam	50	1 00	

Horse Shoes.

Burden.....℗ keg $3.75@3.87½
Mule Shoes.....℗ keg $4.75@4.87½

Ice Awls, Chisels, &c.

American Ice Chisel Pol'd.....℗ doz. $3.00, dis 15

Ice Cream Freezers.

Star, double action.

2 qt.	3 qt.	4 qt.	6 qt.	8 qt.	10 qt.	14 qt.
$3 75	$4 50	$5 50	$7 00	$9 00	$11 00	$14 00

Crown, single action.

2 qt.	3 qt.	4 qt.	6 qt.	8 qt.	10 qt.	14 qt.
$3 75	$4 50	$5 50	$7 00	$9 00	$11 00	$14 00

Crown, double action.

With fly wheel, 10 qt., $16 00; 14 qt., $20 00; 18 qt., $25 00; 24 qt., $30 00; 32 qt., $37 50.
Without fly wheel, 8 qt., $10 50; 10 qt., $13 00; 14 qt., $16 50; $18 qt., $21 00; 24 qt., $25 00.
Discount, 50 ℗ cent.

American, double action.

	2 qt.	3 qt.	4 qt.	6 qt.
Each	$2 75	$3 25	$3 75	$5 00

Discount 45 ℗ cent.

	2 qt.	3 qt.	4 qt.	6 qt.	8 qt.	10 qt.	14 qt.
Gem	$3 75	$4 50	$5 50	$7 00	$9 00	$11 00	$14 00

Discount 55 ℗ cent.

Ice Creepers.

Scott Mfg. Co.'s Safety, ℗ gross.....$25 00, dis 10
Scott Mfg. Co.'s arctic solid steel, per gro.....$30 00, dis 10
Crown, per doz.....$7 50, dis 35

Ice Tongs.

Champion .....℗ doz $6.00, dis 25&10
Family.....℗ doz $2.75, dis 15

Iron Sinks.

Cast Iron ..... dis 50

Kettles.

Brass, 7 to 17 inches inclusive .....℗ ℔ 28c, dis 10
Brass larger than 17 inches.....℗ ℔ 32c, dis 10
Enameled and Tea Kettles.....See Hollow Ware

Knives.

Am. Butcher.....dis 20
Wilson " .....dis 40&10
Ames' Shoe Knives.....℗ doz $1.50, dis 15

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Three through trains with Pullman cars attached are now run via by this beautiful scenic route, between Suspension Bridge, Buffalo, New York and Philadelphia, leaving Suspension Bridge 8:18 A. M. 4:10 and 7:45 P. M., Buffalo 9:00 A. M. and 4:40 and 10:00 P. M., connecting with all trains from the West.

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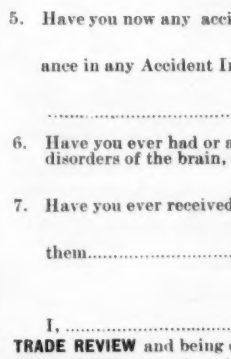

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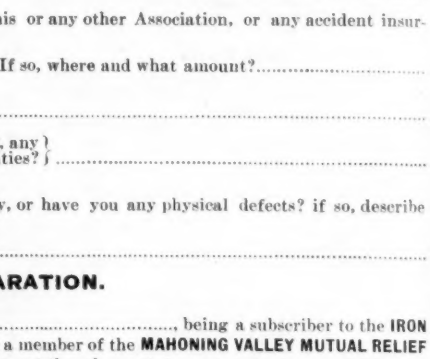

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Mineral Jap'd .....$2.00 dis 60
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" plated.....7.25 "
Shutter, Porcelain.....dis 60&10

Ladles.

Melting, Sargent's.....dis 50&10
Melting, Reading.....dis 30&10
Melting, Monroe's Patent.....℔ doz $4.00, dis 40
Melting, P. S. & W.....dis 30&10
Eberhard Mfg. Co.....dis 33⅓

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No.	Tubular Lanterns.	Per doz.
1	Tubular Lanterns, no guards	$ 9 00
1	Tubular Lanterns, with guard	9 40
0	Tubular Lanterns, no guard	7 50
0	Tubular Lanterns, with guard	7 90
0	Tubular Lanterns, with 5-in. tin refl'r	11 50

Dash board fastening and 7-in. tin refl'r extra 3 53
10 Small brass tubular lanterns..... 7 50
Tubular, Lift Wire, No. 0, ℔ doz.....9.00
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Linen Fish.....dis 25&10
Cotton Chalk.....dis 55
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Branford Lock Co..... 60
Barnes Mfg. Co.....dis 40
Yale Flat Key.....dis 40
Cabinet Eagle..... } Changes made in list price
Cabinet Gaylord.. } Some numbers March 10,
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Yale "Standard" Drawer and Desk.....40&10
Eagle Trunk .....dis 15&2
Association locks.....

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Hickory.....dis 10&10
Lignumvitæ.....dis 10&10
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No. 2, family, list, each..... 7 00 }
No. 3, farmers, list, each ..... 10 00 } dis 25&5
No. 4, butchers, list, each ..... 25 00 }
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Dixon's (P. S. & W.)	1	2	3	4	
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Draw Cut Nos.	5	2	6	8	10	
Each	$50.00	$75.00	$80.00	$225.00	490.00	dis 20

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	$27	$32	$50	dis 60

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10 to 60d.....$2 25
8 and 9d..... 25
6 and 7d..... 50
4 and 5d..... 75
3d..... 1 50
2d..... 2 75
3d fine..... 3 00
2d fine..... 3 75
1¼ inch barrel nails..... 1 50
1⅛ do do do 1 75
1 do do do 2 50
⅞ do do do 3 00
Cut spikes, all sizes..... 25
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Casing and box nails..... 75
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Tobacco nails..... 50
Wire Nails.....dis 40

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Square, full kegs, ℔ lb.....8½c off list.
Hexagon, " " .....8½c "

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Square nuts.....9c off list
Hexagon .....9½c off list
Washers.....8½c@9c off list

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Bolt ends.....discount 75
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Zinc and Tin.....dis 60&10
Brass and Copper.....dis 50
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Rotary Knife.....℔ doz $15.00 dis 10
Diamond State.....℔ doz $15.00, dis 10

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Faber's Round Gilt.....℔ gro $5.25 net
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Dixon's Carpenter's.....dis 40&10

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L. & I. J. White.....dis 25

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" S. C. " .....$15.50 dis 50
Railroad, 4 to 5 lbs.....doz $6 60
5 to 6 lbs..... 7 20
6 to 7 lbs..... 7 80
7 to 8 lbs..... 8 40
Railroad Tamping Picks, 7 to 8 lbs..... 10 80
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Bailey's Patent Adjustable.....discount 20 @ 10
Sandusky, fancy.....discount 15
Planes wood { 1st quality bench
2d " "
1st " fancy

Pliers and Nippers.

Button's Patent .....dis 33⅓

Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21 00 ℔ doz. .....dis 20&10
Gas Pliers.....dis 55
P. S. & W. Cast Steel.....dis 50
P. S. & W. Tinners' Cutting Nippers add 6 per cent. dis 10

Plumbs and Levels.

Stanley's R. & L. Co.'s Pat. Adjust... dis 65&10&10
Stanley's R. & L. Co.'s Non-Adjust...dis 65&10&10
Standard Rule Co's New Adjustable dis 65&10&10
Davis', iron .....

Post Hole and Tree Augers.

Samson Post Hole Digger..℔ doz. $36.00, dis 20&10
Fletcher Post Hole Augers ....℔ doz. $36.00, dis 20
Eureka Diggers.....℔ doz. $27.00
Leed's .....each $2.50
Vaughan's Hollow Tube Post Hole 6 in., $23.60; 7, 8 and 9 in., $ 25.00 ℔ doz.....dis 20&10
Vaughan's, post hole, 7, 8, 9, in. $18 00 ℔ doz. net.
Champion iron digger.....$13.00 net

Potato Parers.

White Mountain.....℔ doz $5.50
Antrim Combination.....℔ doz $8.00
Hoosier .....℔ doz $13.50

Pruning Hooks and Shears.

Disston's Combined Pruning Hook and Saw ℔ doz $18.00.....dis 20&10
Disston's Pruning Hook.....℔ doz $12.00 dis 20&10
E. S. Lee & Co.'s Pruner.....dis 33⅓
Pruning Shears.....℔ doz $4.00@4.50

Pulleys.

Hot House and Tackle.....discount 65&10
Japanned Screw.....discount 65&10
Brass Screw.....discount 70&10
Japanned Side.....discount 65&10
Japanned Clothes Line.....discount 60&10

Pulley Blocks.

Malleable iron.....
Wood.....
Differential.....

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Cistern Pumps.....discount 40 ℔ ct
Pitcher Pumps..... " 60& 10 ℔ ct
Drive Wells and Yard, Set Length Lift and Force Pumps..... " 40 ℔ ct
Iron & brass Cylinder Force Pumps, Hand Rotary Force Pumps, including Rotary Barrel Pumps " 30 & ct
Windmill Stands..... 40 ℔ ct

Punches.

Saddlers' or Drive...℔ doz. $2.00; 2.25; 2.50 dis 55
Bemis & Call Co.'s Cast Steel Drive.....dis 50&5
Bemis & Call Co.'s Springfield Socket.....dis 50&5
Solid Tinners..... ℔ doz. $1.44, dis 55
Spring .....$6, dis 55

Rails.

Sliding Door, Wrought Brass.....℔ lb 35c dis 20
Sliding Door, Iron, Painted.....℔ foot 4c dis 20&10
Com barn door ½ round.....℔ ft. 2c net
Check back.....℔ ft. 1¾c net

Rakes.

Cast Steel.....dis 50&10@60
Malleable .....dis 50&10@60

Razor Strops.

Torrey's .....dis 20

Refrigerators.

G. N. Pierce & Co.....dis 30@33⅓
Challenge.....dis 33⅓

Rivets.

Iron, in papers.....discount 40
Iron, in bulk.....discount 40
Tinned.....discount 40
Copper.....discount 40 and 10

Rods.

Stair, Brass.....dis 25
Stair Black Walnut.....60c ℔ doz. dis 10

Rope.

Manufacturer's list August 7, 1884.....dis 1c ℔ lb
Manilla.....⅝ inch ℔ lb 16½c
Manilla.....¼ and 5-16 inch ℔ lb 17c
Sisal.....½ and larger
" .....⅜
" .....¼ & 5-16

Rules.

Stanley.....discount 70 and 10
Boxwood.....discount 75&10&10
Standard.....Ivory.....discount 50@50&10
Stanley.....Ivory.....discount 50&10

Sad Iron.

From 4 to 10 lbs.....per lb 3 net
Self-heating.....℔ doz $9 net
Self-Heating, Tailor's.....℔ doz $18 net
Gleason's Shield and Toilet .....discount 25
Mrs. Potts's Irons, double pointed.....discount 35
Mrs. Potts's Irons, square back.....discount 35
Enterprise Star Irons.....discount 35
Com. Fluter and Sad Iron...℔ doz $15, discount 15

Sandpaper.

Baeder, Adamson & Co., No. 0 to 1½ $5 00; Nos. 2 to 3, $5 50.....discount 40 ℔ ct
Star, all Nos.....$4 00 " 40 ℔ ct
Sand paper in 50 yard rolls

	Nos. 00 to 1½	2	2½	3	3½	
	10	11	12	13	15c	yard.
	00 to 1½	2	2½	2-0	½ to 3	
Emery paper	6 50	7 50	9 50	11 50	6 50	pr rm
" cloth	18 00	20 00	24 00	26 00		"
Crocus "	18 00					"

Discount 40

Sash Cord.

Common.....℔ lb 12½c@13c net
Patent.....℔ lb 15c@16c net
White Cotton Braided.....32½c @ 34c ℔ lb net
Common Russia Sash.....℔ lb 13c
Patent Russia Sash.....℔ lb 15c
Silver Lake, white Cotton..... 45c
" drab " 50c

Sash Locks.

Morris .....dis 50
Attwell Mfg. Co.....dis 25&33⅓

Sash Weights.

Solid Eyes, in 500 lb. lots and over per lb 1¾c net

Sausage Stuffers or Fillers.

Miles' "Challenge".....℔ doz. $20.00 dis 40
Perry .....℔ doz. No. 15; No. 0, $21, dis 25&10
Draw Cut No. 4.....each $30.00, dis 20
Enterprise Mfg. Co.....dis 25
Silver's .....dis 25

Saws.

Disston's Circular.....discount 40
Disston's hand panel, rip &c.....discount 20& 10
W. M. & C., Champion Regular.....
Diston's " " .....
W. M. & C., " Thin Back.....
" " " .....

Saw Sets.

Boynton's Patent X Cut, ℔ doz. $12.00; Hand Saw, ℔ doz. $10.00 .....dis 25
Aiken's Genuine.....$13.00, dis 50 &10
Morrill Saw Sets..... 7.50

Scales.

Hatch Counter, ℔ doz.....$42, discount 45
Fairbanks' .....discount 25
Forsyth Scale Co.....discount 40
Howe's.....discount 20 & 10
Scale Beams..... .....discount 40 & 10
Hatch, Counter, No. 171.....℔ doz $42.00, dis 40&10
Hatch, Tea, No. 161.....℔ doz $15.00. dis 40&10
Chatillon's Grocers .....dis 40
Family Universal ℔ doz, 12 lb, $30.00; 25 lb $36.00 net
Scale Beams, List of January 12 1882....dis 55@60

Scrapers.

Adjustable Box Scraper (S. R. & L. Co.) $6.50.....dis 20&10
Box, 1 Handle.....℔ doz $4.00, dis 10
Foot.....dis 50&10

Screw Drivers.

Stanley R. & L. Co.'s Varnished Handles dis 60&10
Stanley R. & L. Co.'s Black Handles.....dis 50&10
Sets Interchangeable.....℔ doz $18.00 dis 25
Thoyer's improved ferrule Screw drivers .....

Screws.

Japanned, list of Plain Screws.....40 & 10
Machine, flat head, iron..... 55
Machine, round head, iron..... 50
Bench, iron.....55 & 10
Bench, wood, beech, per dozen $3..... 10
Bench, wood, hickory.....20 & 10
R H Nickle plate.....
" " " .....
American Screws—flat head iron.....dis 75
" " " brass .....dis 75
" " round head iron.....dis 75
" " " brass .....dis 65
Lag.....dis 75 & 10
Hexagon cap screws..... .....dis 65
Square " .....dis 65 & 5
Set Screws.....dis 70

Scroll Saws.

Lester, $10.00.....dis 25
Rogers, $3.50.....dis 25

Sheep Shears

Wilkinson improved.....discount 12½

Shears and Scissors.

American (Cast) Iron.....dis 75
Pruning .....See Pruning Hooks and Shears
Barnard's Lamp Trimmers.....℔ doz $3.75
Tinners'.....add 6 per cent., dis 10
Heinsch's List, Dec. 1881.....dis 60
Heinsch's Tailor's Shears.....dis 33⅓
Steel, common.....dis 55&5

Sheaves.

Sliding Door M. W. & Co., list.....dis 50&10&2
Sliding Door R. & E. list.....dis 60&10&2
Sliding Door, Patent Roller.....dis 60&10&2
Sliding Door, Pat'nt Roller, Hatfield's dis 60&10&2
Sliding Door, Russell's Anti-Friction..dis 60&10&2
Sliding Door, Moore's Anti-Friction .....dis 60
Sliding Shutter, R. & E. list.....dis 50&10&2
Sliding Shutter, Sargent's list.....dis 60&10
Sliding Shutter, Reading list.....dis 60&10
Moore's Anti-Friction (Hanging)..New list, dis 25

Ship Tools.

L. & I. J. White.....dis 20 & 5

Sheet and Tank Rivets.

"Norway".

All sizes.....discount 15

Shovels and Spades.

Ames' new list.....discount 17½
Chisholm.....discount 33⅓
Rowland's..... discount 50

Shovels and Tongs.

Iron and Brass Head, R. & E. list.....dis 60&10&2
Iron and Brass Head, P. S. & W.....dis 50&5&10
Polished Steel, new list.....dis 50&10&2

Sledges.

Solid Steel.....16
Steel faced.....11

Snaps

Covert's loop harness snaps.....discount 50
Sargent's Patent..... "
German..... "
Henshaw's..... "

Spikes.

Boat wrought ⅝ and larger..... .....2⅞
" 5-16 " 3
" ¼ " 3¼

Spikes—WROUGHT.

All lengths by ¼ inch..... 3¼c
do do do 5-16 inch..... 3
do do do ⅜, 7-16 and ½ inch..... 2¾

Spoons.

Britannia.....dis 60&10
Wm Rogers Mfg Co.....dis 50&5&5
Tin (P. S. & W.), Teas.....$1.25 ℔ gro net
1847 Rogers Bros. A1.....dis 50&6 each
Hall & Elton.....
Maltby Curtiss & Co.....
Basting Spoons.....
Silver Steel.....

Spoke Shaves.

Iron.....dis 40
Wood .....dis 30

Spoke Trimmers.

Bonney's.....℔ doz $10.00 dis 50
Stearns'.....℔ doz $9.00 dis 20 &10

Squares.

Steel or iron, case lots.....discount 55
Try squares and T bevels.....discount 40
Stanley's .....

Stocks and Dies.

King's.....discount 10 ℔ ct
Morse's..... " 10 ℔ ct

Stone.

Hindostan, No. 1, 6c; Ax, 8c; Slips 10c .....dis 40
Sand Stone.....℔ lb, 5c dis 33⅓&10
Washita Stone.....No. 1, ℔ lb 15c net
Turkey Oil Stone (Chase) 4 to 8 in...℔ lb 60c dis 10
Turkey Slips (Chase).....$1.75 ℔ lb dis 10
Lake Superior (Chase).....℔ lb 16c dis 10
Lake Superior Slips (Chase).....℔ lb 30c dis 10
Washita Slips No 1.....dis 50
Washita No 2 stone.....
Arkansas Stone..... 1.75
" Slips 2.50

Stove Pipe Elbows.

The Patent Corrugated Stove Pipe Elbow made of one piece.

Best charcoal iron (No. 26.)—

4 inch ℔ doz	$1.80	5½in. ℔ doz	$3.60
4½ " "	2.25	6 " "	4.10
5 " "	3.20	7 " "	5.00

Genuine Russia iron—

4 in. ℔ doz	$3.40	5½in. ℔ doz.	$8.50
4½ " ℔ doz	5.00	6 " ℔ "	9.50
5 " ℔ doz	7.50	7 " ℔ "	11.00

Planished American Russia iron—

4 in. ℔ doz	$3.40	5½in. ℔ doz.	$7.50
4½ " ℔ doz	5.00	6 " ℔ "	8.50
5 " ℔ doz	6.50	7 " ℔ "	9.50

		Charcoal.	Planished.	Genuine Russia.
4-piece Elbows	5 in	2 00	4 65	5 50
	6 in	2 00	4 85	5 75
	7 in	3 00	6 50	7 50
6-piece Elbows	5 in	3 75	7 00	8 00
	6 in	4 50	9 00	10 25
	7 in	5 50	10 25	11 75

Discount.....

Swage Blocks.

Per lb.....3

Tacks, Brads, &c.

New List, September 1, 1882.

Tinned Swedes tacks.....discount 30
" American tacks..... 30
Swedes tacks, all kinds..... 30
American cut tacks..... 30
Copper tacks and nails..... 30
Swedes Hungarian nails..... 30
Gimp and lace tacks..... 35
" " " tinned..... 30
Furnishing nails..... 30
Trunk and clout nails..... 25
Common and patent brads..... 25
Basket nails..... 20
Brush tacks..... 20
Leathered carpet tacks..... 20
Cigar box nails..... 20
Chair nails..... 20
Double pointed tacks..... 20
Extra 10 per cent. on all the above.
Trunk and clout..... 40
Am. Iron tinned.....

Tap Borers.

Common and Ring.....
Ives' Tap Borers.....Nos. 1, 2, 4—dis 20
Ives' Tap Borers.....Nos. 13, 14—dis 15&10
Enterprise Mfg Co.....dis 25&10

Tapes, Measuring.

American.....dis 20&10
Spring .....dis 25&10
Chesterman's.....dis 40

Ties.

Covert's Pat. Rope.....Regular list, dis 20@25
Covert's Hemp Horse and Cattle Ties.....dis 50&5
Covert's Jute Horse and Cattle Ties.....dis 50
Meneely's Pat. Rope and Web.....dis 50&10
Meneely's Horse and Cattle Ties.....dis 40&10
.....dis 40&10

Tobacco Cutters.

Enterprise Mfg. Co. (Champion)..... dis 20&10

Transom Lifters.

Wollensak's Patent.....dis 35

Triers.

Butter and Cheese..... dis 25

Trowels.

Lothrops' Brick and Plastering.....dis 25
Reed's Brick and Plastering.....dis 15
Disston's Brick and Plastering.....dis 20&10
Brade's brick.....

Truck, Warehouse, &c.

Penfield Block Co.'s list 1882.....dis 40

Twine.

	BC.	B.
No. 12, Flax Twine, ¼ and ½ lb Balls	18c	20c
No. 18, " " ¼ and ½ "	17c	18c
No. 36, " " ¼ and ½ "	17c	18c
No. 264, Mattrass ¼ and ½ "		36c
Chalk Line, Cotton, ½ lb Balls		28c
Mason Line, Linen, ½ "		55c
2-Ply Hemp, ¼ and ½ lb Balls (Spring Twine)		14c
3-Ply " " 1 lb Balls		14c
3-Ply " 1½ lb Balls		13c
Cotton Wrapping, 5 Balls to lb		14@20c

Valves.

Jenkins' Patent Gate Valves.....discount 35
" " Globe Valves.....discount 40
" Standard Packing Valves.....discount 20
Chuck valves.....

Traps.

Genuine, Newhouse.....dis 35
Newhouse, genuine.....dis 33⅓
Hawley & Norton.....dis 50
Wood, mouse.....2 c ℔ doz holes
Dead Shot.....$1 25 ℔ doz net
Delusion, mouse.....$1 75 net
Wheel, mouse.....
Imitation.....dis 50

Vises.

Solid box.....45@50
Solid "Crown" (A. H. Hildick), 40 to 100 lb, 15c net
Solid, Peter Wright's..... 15½
Saw Filers, Wentworth's..... 9 00
Steam's.....
Parker's.....
Prentiss.....
Stephen's.....
Parker's.....discount 10 ℔ ct
Prentiss..... " 10 ℔ ct
Stephen's..... " 25 ℔ ct

Washer Cutters.

Smith's Patent.....℔ doz $12 00, dis 20&10&10
Johnson's.....℔ doz $11 00, dis 33⅓
Penny's.....℔ doz Pol. $14 00; Jap'd. $16 00, dis 25
Appleton's.....℔ doz $16 00, dis 60&10
Bonney's.....dis 30&10

Waste.

White waste.....6@13
Colored " .....7@9

Wedges.

Wood choppers', ℔ lb.....iron 3c, steel 4½
Coal, solid steel " 11¼

Weight Cords

Meneely Weight Cord.....discount 40&10
Covert's " " 35 ℔ ct

Wheelbarrows.

Common Railroad..... 14 50
Bolted 18 00
Bolted iron wheel.....
Tubular iron .....
Jackson steel .....
Garden barrow.....
Discount.....

Wire.

	New List.
Brass and Copper	
Bright and annealed, Nos. 0 @ 18	discount 15
" " Nos. 19 @ 26	discount 67½
" " Nos. 27 @ 36	discount 67½
Coppered Nos. 0 @ 18	discount 72½
Galvanized, Nos. 0 @ 18, market list	discount 62½
Tinned, Nos. 0 @ 18	discount 57½
Cast steel	discount 50 @ 52½
Tinned Broom Wire, Nos. 18 @ 20	discount 55
" " " " 21 to 22	8½c lb net
Annealed Fence, Nos. 8 and 9	discount 67½
Annealed Grape, Nos. 10 to 14	discount 67½
Galvanized Telegraph, Nos. 7 to 9	6½c lb net
Fence Staples	℔ lb 5½ @ 5¾c
Fence Staples, galvanized	℔ lb 6½ @ 6¾c
Stubs Steel Wire regular	75 per lb net
Barb Wire, painted	5c
Barb Wire, galvanized	5c
Roebling's Iron and Steel Wire Rope (Roebling List)	discoun 5

TRAVELERS' REGISTER.

[Standard Time.]

Lake Shore & Michigan Southern Railroad.

TRAINS GOING EAST.	Arrive from West.	Depart East.
No. 4, Fast Limited Ex.....	*1 10 a m	*1 25 a m
No. 8, N. Y., B't'n & At. Ex	*6 35 a m	*7 00 a m
No. 26, Elyria Accom.....	†8 05 a m	.....
No. 24, Toledo & Buffalo Accom. via Sandusky.....	†10 35 a m	†10 50 a m
No. 24, Toledo Accommodation via Norwolk.....	†10 35 a m	†10 50 a m
No. 12, N. Y. & Bos. Ft. Ex.	*1 55 p m	*2 25 p m
No. 14, Sp'l N.Y. & Bos. Ex.	.....	5 00 p m
No. 2, Night Ex. via Norw'k	9 40 p m	†10 00 p m
No. 22, Night Ex. via Sand'y	†9 42 p m	.....
No 26, Conneaut Accom.....	.....	†4 25 p m

TRAINS GOING WEST.	Arrive from East.	Depart West.
No. 1, Fast Limited Ex.....	*11 55 p m	*12 05 a m
No. 23, Mich. Ex. via Sand'y	*2 15 a m	*2 35 a m
No. 3, Chi. Ex. via Sand'y..	‡6 05 a m	†6 30 a m
No. 25, Mich. Ac. via Norw'k	.....	†6 10 a m
No. 21, Toledo Ex. via Norwalk and Sandusky.....	†12 50 p m	†3 20 p m
No. 5. Fast St. Louis Ex. via Sandusky.....	†12 05 p m	*12 50 p m
No. 9, Chi. Pac. Ex. via Nor'k	*6 10 p m	*6 40 p m
No. 31, Elyria Accommodation, to Elyria only.....	.....	†4 30 p m
No. 27, Conneaut Accom.....	†8 10 a m	.....

Sunday train for Nottingham—Depart 8:30 a. m. and 1:45 p. m.; returning, leav Nottingham at 9:05 a. m. and 3:45 p. m.

Reference marks—*Daily. †Daily except Sunday. ‡Daily except Monday.

Cleveland, Columbus, Cincinnati & Indianapolis.

DEPARTURE	
No. 3, Col., Cin. and Ind. Ex.	9 00 A. M
No. 23, Wheeling Ex.....	6 50 A. M
No. 5, Col., Cin., Ind. and St. Louis Ex.	*12 25 P. M
No. 9, Col., Cin., Ind. and St. Louis Ex.	*6 50 P. M
No. 27, Columbus Accommodation.....	3 30 P. M
No. 29, Massillon and Uhrichville Ex.....	4 30 P. M
ARRIVALS.	
No. 8, Col., Cin., Ind. and St. Louis Ex.	*6 40 A. M
No. 20, Massillon and Uhrichville Ex....	8 55 A. M
No. 22, Galion Accommodation.....	9 20 A. M
No. 26, Wheeling Express.....	4 15 P. M
No. 12, St. Louis, Ind. & Col. Ex.....	*2 00 P. M
No. 14, Columbus and Cincinnati Ex...	*4 45 P. M
No. 2, Col., Cin. and Indianapolis Ex...	9 50 P. M
No. 4, Col., Cin. & N. Y. Express.....	1 15 A. M

*Daily, all other trains daily except Sunday.

Cleveland & Pittsburg.

	DEPART.	ARRIVE.
Mail.....	8 00 a m	2 30 p m
New York Express.....	2 00 p m	6 25 p m
Alliance Accommodation.....	3 15 p m	9 50 a m
Ravenna Accommodation...	4 50 p m	8 15 a m
Night Express.....	†11 10 p m	5 55 a m
Newburg Accommodation...	10 30 a m	11 40 a m
Newburg Accommodation...	12 55 p m	1 20 p m

†Night Express runs daily except Saturday by way of Wellsville, and on Saturday by way of Alliance.

"The Nickel Plate."

EASTWARD.	ARRIVE.	DEPART.
Buffalo Accommodation.....	10 49 a m	10 54 a m
Chicago Accommodation.....	9 02 p m	.....
Local Freight.....	11 45 a m	12 15 p m
WESTWARD.	**ARRIVE.**	**DEPART.**
Chicago Accommodation.....	.....	6 45 a m
Bellevue Accommodation....	4 56 p m	5 01 p m
Local Freight.....	12 30 p m	12 50 p m

Euclid Accommodation departs 6:24 a m., 9:10 a. m., 5:25 p. m.

*Daily.

New York, Pennsylvania and Ohio.

	ARRIVE.	DEPART.
N. Y. & Pitts. Express.....	*6 20 a m	*7 20 a m
N. Y. & Pitts. Express.....	6 15 p m	11 00 p m
Youngstown & Pitts. Acc.....	9 45 p m	10 35 a m
Fast N. Y. & Pitts. Express..	*12 50 p m	*2 30 p m
Mahoning Accommodation...	10 08 a m	4 00 p m

*Sunday trains.

Connotton Valley Railway.

	DEPART.	ARRIVE.
Can. Sher'dsville & Cosh't'n...	7 00 a m	9 47 a m
Can. Sher'dsville & Cosh't'n...	3 05 p m	7 17 p m
Kent Accommodation.....	8 30 a m	7 37 a m
Kent Accomodation.....	8 10 p m	7 33 p m
Newburg and Bedford.....	5 50 p m	6 05 a m
Newburg and Bedford.....	11 40 a m	.....

From Newburg—Arrive: 7:00 a. m., 1:05 p. m., 4:25 p. m., 5:40 p. m.

Newburg—Depart: 6:12 a. m., 8:30 a. m., 11:40 a. m., 2:00 p. m., 4:45 p. m., 5:50 p. m.

Trains Sunday arrive from Kent at 7:37 a. m. and 7:33 p. m.

Trains depart for Kent at 8:30 a. m. and 8:10 p. m., central standard time.

Depot corner Huron and Ontario streets.

Valley Railway.

	ARRIVE.
From Valley Junct., Canton & Akron..	*10 04 a m
From Canton, Pittsburg and intermediate points.....	†1 30 p m
From Valley Junct., Canton & Akron..	*5 40 p m
	DEPART.
To Akron, Canton and Marietta.....	†7 40 a m
To Akron, Canton and Mahoning Valley points.....	*2 25 p m
To Akron and Canton.....	†5 40 p m
To Akron, Canton and Valley Junct...	‡8 40 a m

*Daily. †Daily except Sunday. ‡Sunday only.

Trains leave depot, South Water street.

Cleveland, Lorain and Wheeling.

	DEPART.	ARRIVE.
Wheeling Express.....	6 40 a m	4 15 p m
Uhrichsville Express.....	4 30 p m	8 55 a m

Cleveland, Akron and Columbus Railroad.

Cleveland, Akron and Columbus Railroad, running over Cleveland and Pittsburg Railroad to Hudson, for Akron, Columbus, etc.

	ARRIVE.	DEPART.
Mail.....	5 40 p m	9 00 a m
Express.....	2 30 p.m	2 00 p m
Accommodation	9 50 a m	3 15 p m

WILLIAM WHITE,

Manufacturer of

Boilers & Gas Holders

TELESCOPE AND SINGLE GAS HOLDERS,

Wrought and Cast Iron Tanks.

Orders Solicited. Write for estimates.

NEW CASTLE, PA.

"Mt. Vernon & Pan Handle Route"

OPENED DEC. 1, 1884.

VIA

Cleveland, Mt. Vernon and Delaware

AND

LITTLE MIAMI RAILROADS.

Through Pullman Palace Sleeping Cars, and Day Coaches between Cleveland, Akron, Columbus and Cincinnati, making but one change of cars from the Lake to the Gulf.

NO BUS TRANSFERS.

4†	28*	2†	In effect Dec. 1, '84 Standard Time.	3†	27*	1†
P. M.	P. M.	A. M.	via Mt. Vernon rt.	P. M.	A. M.	P. M.
2 00	8 00	9 00	.....Cleveland	5 40	6 40	2 30
3 42	9 30	10 30	.....Akron	4 10	5 10	12 59
4 44	10 36	11 13	.....Orrville	3 22	4 05	11 40
5 37	11 35	12 00	.....Millersburg	2 37	3 05	10 41
		1 12				
7 26	1 25		D ..Mt. Vernon.....	1 25	1 25	9 10
		1 32		12 00	11 45	7 30
P. M.	A.M*	P.M*	.....Columbus	M*	P.M*	A. M.
.....	3 25	3 20	Via L. M. Ry			.....
	4 15	4 12	..... London	10 57	10 33	.....
	5 15	5 15	.....Xenia	10 10	9 40	.....
	7 32	6 00	..... Dayton.....	9 05	8 55	.....
	6 10	6 10	.....Morrow.....	9 03	8 42	.....
	6 36	6 36	.....Loveland	8 35	8 17	.....
	7 30	7 25		7 45	7 25	.....
	A.M*	P.M*	.....Cincinnati.....	A.M*	P.M*	.....
	7 55	8 55	..Via L. & N. Ry..	6 35	7 07	.....
	12 10	1 00	.....Louisville	2 30	2 45	.....
	P. M.	A. M.		A. M.	P. M.	.....
	7 00	7 45	.....Nashville.....	7 30	8 05	.....
	A. M	A. M		P. M.	A. M.	.....
	11 45	12 55	.....Decatur	3 00	3 25	.....
	P. M.	P. M.		P. M.	A. M.	.....
	6 50	7 50	.....Montgomery....	8 05	8 35	.....
	A. M.	P. M.		A. M.	P. M.	.....
	2 00	2 40	.....Mobile.....	1 15	1 35	.....
	P. M.	A. M.		A. M.	P. M.	.....
	7 00	7 45	....New Orleans....	3 20	8 00	.....
	P. M.	A. M.		P. M.	A. M.	.....
	A. M.	P. M.		A. M.	P. M.	A. M.
	5 35	3 25	Via C. St. L. P. Ry	11 30	11 20	7 30
	7 03	4 53	.....Columbus.....	9 56	9 52	5 50
	7 51	5 46	.....Urbana	8 58	8 59	4 52
	9 22	7 47	.....Piqua.....	7 12	7 27	A. M.
	9 52	8 20	.....Richmond.....	6 20	6 41	
	11 37	10 20	..Cambridge City..	4 25	4 55	
	A. M	P. M.		A. M.	P. M.	
	11 55	10 45	.....Indianapolis....	3 50	4 40	Runs through from Chicago.
	2 10	1 17	Via StL V&T H Ry	1 25	2 20	
	3 32	2 56	....Terre Haute.....	11 45	12 25	
	4 15	3 49	.....Greenup	1 05	11 45	
	5 03	4 55	.....Effingham	9 53	10 40	
	7 30	7 30	.....Vandalia.....	7 00	8 00	
	M	P. M.	..... St. Louis.....	P. M.	A. M.	

No. 6†			No. 5†
Leave 3 15 P.M.	Cleveland	Arrive 9 50 A. M.	
5 10	.....Akron	8 00	
4 30 A.M.	....Orrville.....	8 45 P. M.	
6 52	.....Gambier.....	6 37	
7 44	.....Centerburg.....	5 30	
8 27	.....Westerville.....	4 56	

Trains marked * run daily. Trains marked † run daily except Sunday.

E. C. JANES,
A.G.F.&P.A., Akron, O.

EDWARDS, TOWNSEND & CO.

Wholesale Grocers,

AND DEALERS IN

Wines, Liquors and Cigars,

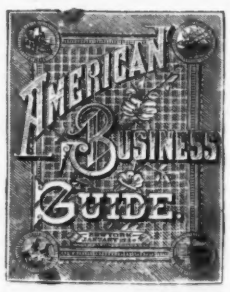
Teas a Specialty.

NOS. 151 & 153 WATER ST.

CLEVELAND, O.

THE

AMERICAN BUSINESS GUIDE



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PHILADELPHIA PA.

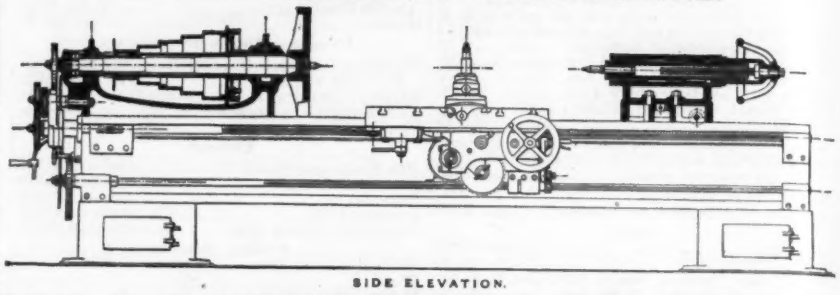
Sharon Boiler Works,

(Limited)

SHARON, PA.

All kinds of Boilers and Sheet Iron work.

24-inch EXTRA HEAVY ENGINE LATHE.



SIDE ELEVATION.

Built by **S. S. HEPWORTH & CO.,** Glenwood Station, YONKERS, N. Y.

Prices and Particulars furnished on application.

DRILLING RIGS AND TOOLS,

BOILERS, ENGINES,

Tubing, Casing, Cables,

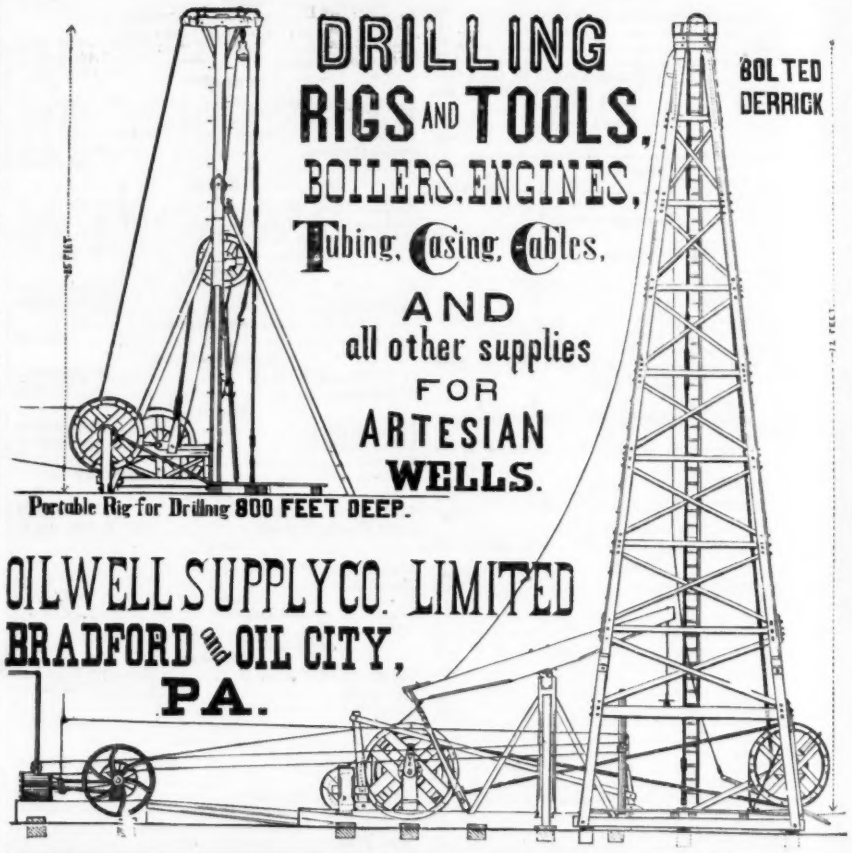
AND

all other supplies

FOR

ARTESIAN WELLS.

BOLTED DERRICK



Portable Rig for Drilling 800 FEET DEEP.

OIL WELL SUPPLY CO. LIMITED

BRADFORD AND OIL CITY, PA.

HERCULES POWDER

FUSE, CAPS AND Electric Mining Goods

HERCULES

THE GREAT STUMP AND ROCK

ANNIHILATOR.

THE STRONGEST AND SAFEST EXPLOSIVE

KNOWN TO THE ARTS.

HERCULES POWDER COMPANY,

40 PROSPECT ST., CLEVELAND, O.

J W WILLARD. - - - MANAGER

Wire Cloth.

Green, best $2 00

Wrenches.

Coe's genuine 50
Girard Standard ..... discount 50 & 10
Mechanics' 10 and 10 ..... discount 50
P. S. & W. Mechanics ..... discount 50 & 10
Agricultural ..... discount 70
Campfield & Sutliff Engineer's 50
Mechanics' 60
Agricultural 70

Wringers. Per doz.

No. 2½ Universal $30 00
No 2 Eureka 30 00
Novelty for Common Tubs, No. 2, 10-inch ... $30.00
Novelty, for Common Tubs, No. 3, 11-inch ... 34.50
Excelsior, with Folding Bench, No. A, 10-in. 48.00
Excelsior, with Folding Bench, No. B, 11-in. 52.50
Peerless No. 2½ 30.00
Peerless No. 3½ 34.50
Net to dis $3 ℔ doz.

HEAVY HARDWARE.

Anvils. per lb.

Eagle, American ..... 10 cts dis 20
Wrights ..... 10¾ to 11
Wilkinson ..... discount 10½

Bellows. Discount.

Hill's ..... 40 per cent
Blacksmith's common, new list ..... 50 per cent
Moulders, new list ..... discount 25 per cent
Hand, new list ..... 25 per cent
Blacksmith's hand made .....

Boilermaker's Tools.

Buffalo Forges and Blowers ..... discount 20
Watson's " " ..... net list
National Tube Cleaner ..... discount 20
Wire Flue Brushes ..... net list

Boiler Tubes.

"National" Standard Gauge 1 in to 10 in ... dis 37½
"National" Standard Gauge 11 in to 15 in ... dis 25
"National" Special Locomotive Tubes ..... net list

Caldrons.

Sperry's Farmer's Boilers ..... " 30 ℔ ct

Drills

Boynton's ..... discount 20 ℔ ct

Drill Bits

Morse Taper Shank ..... discount 40 ℔ ct
Morse Straight ..... " 40 ℔ ct
Morse Bit Stock ..... " 40 ℔ ct

Flatters.

Per lb 25

Fullers.

Per lb 25

Forge Blower.

Buffalo ..... discount 35&5 ℔ ct

Forges.

Buffalo ..... discount 40 ℔ ct
Holts ..... " 10 ℔ ct

Lawn Mowers.

All sizes ..... discount 30 ℔ ct

Tuyere Irons.

Duck's Nest 2 00
" " No. 2 60
" " Water 2 50
Clark's ..... discount 40 ℔ ct

LEAD.

American, ℔ lb ..... 4@ 4¼c
Bar, ℔ lb 5½c
Pipe, ℔ lb ..... 5½c, discount 10 per cent
Sheet, ℔ lb ..... 5¾c, discount 10 per cent
Tin-lined pipe ..... 15c, discount 10 per cent
Block 45c
Chilled Shot 8c

Babbit Metal.

Genuine, per lb., net 25c
Crescent, " 22c
Extra, " 20c
No. 1 " 15c
No. 2 " 12c
No. 3 " 9c
No. 4 " 5½c

COPPER.

Lake Ingot ..... 11¾@12c
Baltimore ..... 11½@11¾c
Arizona ..... 11½@11⅝c

TINNERS' STOCK.

Tinners' Tools and Machines.

Machines (P. S. & W.) ..... less 10
Tools (P. S. & W.) ..... less 20

Tin.

Banca ..... per lb. 22
Straits ..... " 18½@19c
English ..... " 21c
Bar ..... " 22c
Spelter ..... 4¾@5c

Tin Plate.

IC 12x12 charcoal ..... $ 6 00
IC 14x20 do 6 00
IX 14x20 do 7 50
DC 12½x17 do 7 00
DX 12½x17 do 9 00
DXX, 12½x17 do 11 00
DXXX, 12½x17 do 12 75
IC, 20x28 do 13 00
IX, 20x28 do 15 75
IC, 14x20, Best Roof 5 60
IX, 14x20, " 7 10
IC, 20x28, " 11 25
IX, 20x28, " 14 25
IC, 10x15 Best Coke 5 60
Subject to card discount.

Solder.

Half and Half, in bars, warranted 14
No. 1, Refined 12
Spelter Solder 22

Pat-Planished Sheet Iron.

[A] ..... per ℔ 10½c
[B] ..... " 9c

Nos	10	15	21	25
to	14	20	24 &	26
Com.	2-10	4-20	3-40	3-75
Char.	5-50	5-60	6-00	6-20

Sheets over 28 inches wide ¼c extra.

Charcoal Iron.

4½ inch, per dozen 2 50
5 do do 3 50
6 do do 4 50
7 do do 5 50

Planished American Russia Iron.

4½ inch per dozen 5 00
5 do do 6 50
6 do do 8 50
7 do do 9 50
Discount 33⅓ per cent.

Zinc.

Sheet, cask 6¼c
Sheet, open 6½c

IRON AND STEEL.

Flat Bar.

1½ to 4 by ⅜ to 1 inch 1 70
4¼ to 6 by ⅜ to 1 inch 1 80
1¾ to 6 by 1⅛ to 1 inch 2 10
1¼ & 1⅜ by ⅜ to ¾ 1 80
1 & 1⅛ by ⅜ to ¾ 1 90
⅞, ¾ and ⅞ by ⅜ to ¾ 2 10

Round and Square.

1 to 1⅞ inch 1 70
2 to 2⅝ 1 90
2¾ to 3¼ inches 2 20
3⅜ to 4 ..... 2 70
4¼ to 4½ 3 20
4¾ to 5 ..... 3 40

Oval.

⅞ to 1¼ inch 2 10
⅝ to ½ 2 30
½ 2 50
⅜ 2 90

Heavy Band.

1½ to 6 by ¼ and 5-16 inch 1 90
1 to 1⅜ by ¼ and 5-16 inch 2 00
¾ to ⅞ by ¼ and 5-16 inch 2 20
⅝ to ⅛ by ¼ and 5-16 inch 2 70

Half Oval and Half Round.

1½ to 3 inch 2 80
⅞ to 1¼ 2 20
⅝ to ¾ 2 90
½ 3 20
⅜ 4 70

Light Band.

1½ to 6 by ⅛ to 3-16 ..... 2 20

Hoops.

1¼ to 4, Nos. 13 to 15 ..... 2 50
1¼ to 2, Nos. 16 to 18 ..... 2 60
1¼ to 4, Nos. 13 to 15 ..... 2 70
1-10 extra for each gauge lighter.

Sheet Iron.

No. 22 to 24 ..... 2 90
No. 25 to 26 ..... 3 10
No. 27 ..... 3 30
No. 28 ..... 3 5

English Steel.

Best cast ..... ℔ lb 16c
Extra cast 16½c
Round machinery 10c
Swaged, cast 18c
Best double shear 15½c
Blister, 1st quality 13c
Refined tool steel 16½c
Spring calking ..... 7¼@ 7½c
German steel, best 11c
2d quality 10c
3rd quality 9c
Sheet cast steel, 1st quality 15½c
2d quality 14½c
3d quality 12½c

American Steel.

Best brands of refined cast steel, ⅜ to 2 inches 12c
Crucible cast 7c
Open-hearth ditto 4½c
Hammer cast steel 6c
Spring cast steel 1½c
Bessemer and open hearth spring 4½c
Ditto plow 3½c
Bessemer machinery ..... 5 @ 6c
Spring calking 7c
Tire 4
Sleigh shoe 4

Bessemer Steel Tire.

¾ to 1 by 3-32 ..... 3½ ℔ lb
¾ to 1 by ⅛ to 5-32 ..... 3¾ ℔ lb
¾ to 1 by 3-16 to ⅝ ..... 9¾ ℔ lb

Boiler Plates.

"Paxton"—Standard Quality.

C. No. 1 ..... 2 25
C. H. No. 1 Shell 2 75
C. H. No. 1, 50,000 ..... 3 25
C. H. No. 1 Flange 3 75
Extra Heavy 4 75
Homo. Steel 70,000 ..... 5 50
Heads, ⅛c ℔ lb extra.
Boiler Tubes ..... 47½ per cent discount
Burden Rivets 3 75

Boiler Rivets—"Albany."

½, ⅝, 11-16 and ¾ inches diameter 4 00
"Standard" ½, ⅝, 11-16 and ¾ inch diam 4 00

Miscellaneous Cast Steel.

Augur and augur bit 10
Axle steel for wagons 7
Frog points and plates 8
Frog size bars 8
Pick, hammered 10½
Mattock, beveled 9
Table cutlery 7½
Trap spring steel 10
Pike and cant hook 8½
Coal and granite 9

BRASS.

Cash prices for Roll and Sheet Brass. For less quantity than 100 lbs., add 3c per lb.

High Brass

All Nos. not thinner than 00 No. 28, wider than 2 inches, not wider than 14 inches 30c
All Nos. to No. 28 inclusive, and widths over 14 to 20 inches inclusive 35c
All Nos. to No. 28 inclusive, and widths over 20 to 30 inches inclusive 38c
½ per lb advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 8 is Platers' Brass at 53c
Sheets 24x28, and all sheets cut to particular sizes and lengths under 30 inches, in width wider than two inches 37c

Low Brass.

4c per lb. more than High Brass.
Gilding metal 8c per lb, more than High Brass.
Platers' or gold metal.
In Bars 48c
Sawed 51c
Planed or Polished 54c

For Slitting.

Metal in Width inches to ½ inch to No. 28 inclusive 1c per lb., advance.
Metal, in width 2 inches to one inch thinner than No. 28, 2c per lb, advance.
Metal, in width ½ inch to ¼ inch thinner than No. 28, 5c per lb. advance.
Metal ¼ inch in width and less, 10c per lb. advance.
Any of the above widths cut to particular lengths add 7c per pound.

Sheathing Brazier Copper, Bolts, etc.

All sizes, 16 oz. per square foot and over per lb. 22c
Brazier's Copper, ordinary sizes, under 16 oz and over 12 oz. per square foot, per lb 22c
Brazier's Copper, 10 oz. and 12 oz. per square foot, per lb 23c
Brazier's Copper lighter than 10 oz. per square foot, per lb 32c
Circles less than 84 inches in diameter, per lb 33c
Circles 84 inches in diameter and over, per lb. 30c
Segment and Pattern sheets ..... per lb 33c
Locomotive Fire Box sheets ..... per lb. 30c
Sheathing Copper, over 12 oz. per square foot per lb 22c
Bolt Copper ..... per lb. 28c
Copper Bottoms per lb 22c
No copper is Sheathing except 14x10 inches, and not to exceed 34 oz. to the square foot.

Tinning.

14x48 ..... per sheet 6c
All other size sheets, 2½c per square foot. For tinning both sides, double the above amount.

PIPE, WROUGHT.

Standard Wrought Iron Lap Welded Steam and Gas Pipe.

	Inside Diameter Inches.	Weight Per Foot.	Price Per Foot Black.	Price Per Foot Galvan'd	Thickness Inches.
Butt-Welded.	⅛ ...	24	0 03¼		.068
	¼ ...	42	0 03¼	0 05	.088
	⅜ ...	56	0 03¾	0 05½	.091
	½ ...	84	0 04¾	0 06	.109
	¾ ...	1 12	0 06	0 08	.113
	1 ...	1 67	0 08	0 10½	.134
	1¼ ...	2 24	0 11	0 14	.140
Lap Welded.	1½ ...	2 68	0 21	0 24	.145
	2 ...	3 61	0 26	0 30	.154
	2½ ...	5 74	0 42	0 47	.204
	3 ...	7 54	0 55	0 62	.217
	3½ ...	9 00	0 67	0 83	.226
	4 ...	10 66	0 83	1 00	.237
	4½ ...	12 24	1 00	1 25	.246
	5 ...	14 50	1 20	1 50	.259
	6 ...	18 76	1 50	2 00	.280
	7 ...	23 27	2 00		.301
	8 ...	28 18	2 75		.322
	9 ...	33 70	3 70		.344
	10 ...	40 06	4 75		.366
	11 ...	45 02	5 75		.375
	12 ...	49 00	6 50		.375
	13 ...	54 00	7 75		.375
	14 ...	58 00	9 00		.375
	15 ...	.....	10 00		.375

Discount, (car load lots) butt-welded ⅛ inches to 1¼ inches plain ..... 45 per cent
Ditto galvanized ..... 35 per cent
Discounts (car load lots) lap-welded 1½ inches to 15 inches plain ..... 65 per cent
Ditto galvanized ..... 45 per cent
Discounts on less than car lots 2½ per cent, less.
Discounts on pipe cut to specified lengths depends on size and waste, ordinarily 5 per cent lower than random.

Plumbers,' Steam and Gas Fitters' Supplies.

Gas Pipe—
New List ⅛ to 1¼ black ..... discount 45
New List ⅛ to 1¼ galvanized ..... discount 35
1½ and larger black ..... discount 65
1½ and larger galvanized ..... discount 45
Malleable Iron Fittings 30
Grey Iron Fittings ..... discount 65
Steam Brass Goods ..... discount 60&5
Water Brass Goods ..... discount 60
Ludlow Gate Valves ..... discount 25
Register Gauge Cocks ..... net 60
Steam Gauges ..... discount 40
Steam Gauges 5 inches net dial per doz 30 00
Scotch Glass Tubes ..... discount 75
Tools ..... Special
Soil Pipe & Fittings, Mott's List ..... discount 55
Sinks, Mott's list ..... discount 35

SCRAP IRON AND OLD METAL

Per Ton.

No. 1 R. R. wrought scrap $16 00
No. 1 wrought scrap 15 00
No. 1 Machine cast scrap 10 50
Stove plate (free from burnt iron) 9 00
Grate bars 8 00
Pipes and flues (Clean) 11 50
Tank iron 11 50
Hoop and band iron 9
Light sheet iron 7 50
Axle turnings 14 00
Wrought turning (free from cast) 9
Wrought iron, oily drillings 9
Cast borings 7 00
Malleable iron 8 00
Uncut wrought iron boilers 11 50
Old copper per lb 7½
No. 1. H. Brass per lb 7
Heavy yellow brass do 6½
Light Brass per lb 5½
Scrap Zinc per lb ..... 2@3
Tea Lead per lb 3
Heavy Lead per lb 3
Rails ..... 18@19
Car wheels $15

CARRIAGE & WAGON MATERIAL.

Axles.

Half Patent, common ..... discount 55 per cent.
Common ..... rate 4½
Concord 7½

Body Loop Ends.

Lipped, set 60

Clips.

Superior Axle ..... discount 55 per cent
Norway ..... discount 40 "
Saddle ..... dozen set $1 70

Clip King Bolts.

	Nos. 1 & 2	3	4
Flanged, ℔ doz	$2 65	3 50	3 85

Dashes.

Leather, new list ..... discount 20 per cent

Enameled Cloths.

Muslin, ℔ yard, 5-4 17
Drill, " 50 in 25
Duck, " 50 in 50
Tan Back, ℔ yard, 5-4 35

Felloe Plates.

Per lb 7

Fifth Wheels.

Derby, ⅝, ℔ doz $7 50
" ¾, " 8 25

Leather.

No. 1 Top, ℔ ft 20
No. 2 " " 18
No. 1 Dash " 12
No. 2 " " ..... 10 @ 10½
Fancy Morocco, ℔ ft 25
Bow, ℔ ft ..... 20 @ 21
Collar, ℔ ft 20
Harness, ℔ lb 36

Malleable Castings.

Rate 6
Core 7

Pole Eyes and Coupings.

Discount ..... 50 & 5 per cent

Rubber Duck and Drill.—25 & 35 per cent. off list.

Springs.

Seat, 1½x2x26, ℔ pair 65
Buggy, 1½ in. and larger 8
" 1¼ to 1⅜ in 8½
Oil tempered springs 1c advance from above.

Shaft Couplings.

Discount ..... 50 & 5 per cent

Step Pads

Per doz. pair ..... $2 25 @ 7 00

Sun Sh

	Nos. 1	2	3
Mahan's	$8 50	6 50	5 25

Thi . Skeins.

Discount ..... 50 & 10

Whiffletree Hooks.

Premium ..... discount 40 per cent
Griggs ..... " 30 "

Wagon Hardware.

Box Straps and Bolster Plates discount 50 & 10 per cent
Brake Ratchets, no guard ..... each 11
Box Rods, N. T ..... " 8½
Hammer Straps, heavy ..... " 8
Rub Irons ..... " 7
Clevises ..... " 6½
S. T. Hooks and Ferrules ..... " 6½
N. Y. Rings " ..... " 6½
Centre Clip and Ring ..... " 10
Pole Caps ..... " 13
Neck Yoke Centre Irons ..... ℔ 20
" Eyes and Ring 8
Singletree Clip, No. 1 6
" " 2 ..... " 6½
" " 3 ..... " 8½

Wagon Brakes.

Hulbut's ..... each 65
Racine Brake Co.'s ..... " 90
Freeman's Double Lever ..... " 60
" "Boss" ..... "

OILS.

Pure Oils. Packages included.

Sperm, winter bleached per gal ..... 1 25@1 30
Whale, winter bleached per gal ..... 66@68
Straits ..... 40@45
Bank ..... 38@43
Lard oil, extra W. S ..... 62@65
do No. 1 do ..... 54@55
do No. 2 do ..... 45@50
Tallow oil ..... 65@70
Neatsfoot oil, pure ..... 95@$1 00
do No. 1 ..... 75@80
Linseed oil, raw ..... 52@55
do do boiled ..... 55@58
Cotton seed oil, white ..... 50@55
do do yellow ..... 48@53
West Virginia lubricating 28 deg ..... 12c@15c
Paraffine oil, winter pressed ..... 18@25
Capital Cylinder 75
Model do 60
Eldorado Engine 35
Turpentine, per gal 38
Leader Cylinder 70
Herald Cylinder 65
Leader Engine 25

COAL

WHOLESALE.

Wholesale f. o. b. cars at Cleveland:

Carbon Hill and Monday Creek $2 50
Massillon 2 65
Palmyra, lump ..... 2 75@2 90
Brier Hill ..... 2 75@3 00
Pittsburgh 3 00
Salineville 2 25
Tuscarawas 2 10
New Hazelton 2 50
New Hazelton, mix 1 20
" " nut 2 00
Connotton 2 25
Connotton, mix 1 20
" nut 2 00
Anthracite grate 5 13
Anthracite egg 5 22
Anthracite stove 5 54
Anthracite chestnut 5 54

RETAIL.—Delivered.

Massillon Lump 3 65
" Nut 3 40
Carbon Hill and Monday Creek, lump 3 50
Carbon Hill and Monday Creek, nut 3 25
Straitsville, lump 3 40
Straitsville, nut 3 15
Palmyra Lump ..... 3 75@4 00
New Hazelton Lump 3 25
New Hazelton Nut 3 00
Connotton Lump 2 75
Connotton Nut 2 50
75c less on cars by car load.
Anthracite Stove and Chestnut 6 00
Egg and grate 5 75

ENGINEERING REVIEW

FORMS a careful, illustrated selection of the practically important matter contained in some two hundred English, American and Foreign engineering papers, grouping this information into sections, according as it belongs to—

Engineering: Agricultural, Brewing, Gas and Water, Horological, Metallurgical, Milling, Mining, Paper and Printing

Engineering: Pottery, Railway, Sanitary, Steam, Textile, Tool, Wood Cutting and General

16 pages, illustrated by first-class engravings, printed in good style, on superior paper, with weekly lists of Home and Foreign Engineering contracts open, of Situations Vacant, and of Situations Wanted. Quarterly, post free, 50 cents, from 15 Market street, Manchester, England. Specimen copies 3 cents.

L. M. PITKIN, Pres't and Treas. F. L. CHAMBERLIN, Sec'y.

Variety Iron Works Comp'y

BOILER MAKERS.

Machinists and Founders

Shafts, Pulleys and Hangers a Specialty.

51 to 73 Scranton Ave. 21 **Cleveland, O.**

THE

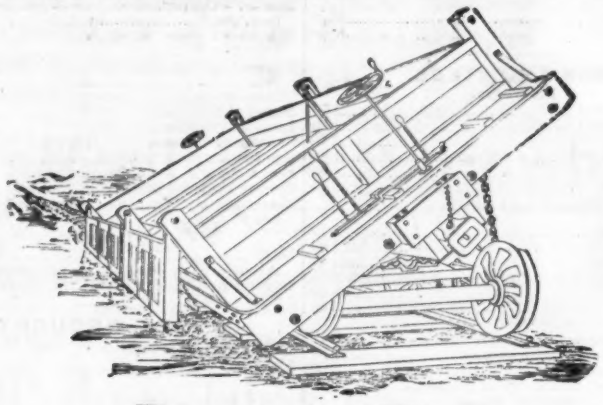
United States Car Co.'s

SCREW LEVER

Dump and Coal Car.

(M. VAN WORMER'S PATENT.)

C. L. VAN WORMER,
General Manager.



Perspective View.

THIS CAR

Has a capacity of 18 to 20 tons,

AND CAN BE HANDLED BY ONE MAN,

Discharging its load instantly.

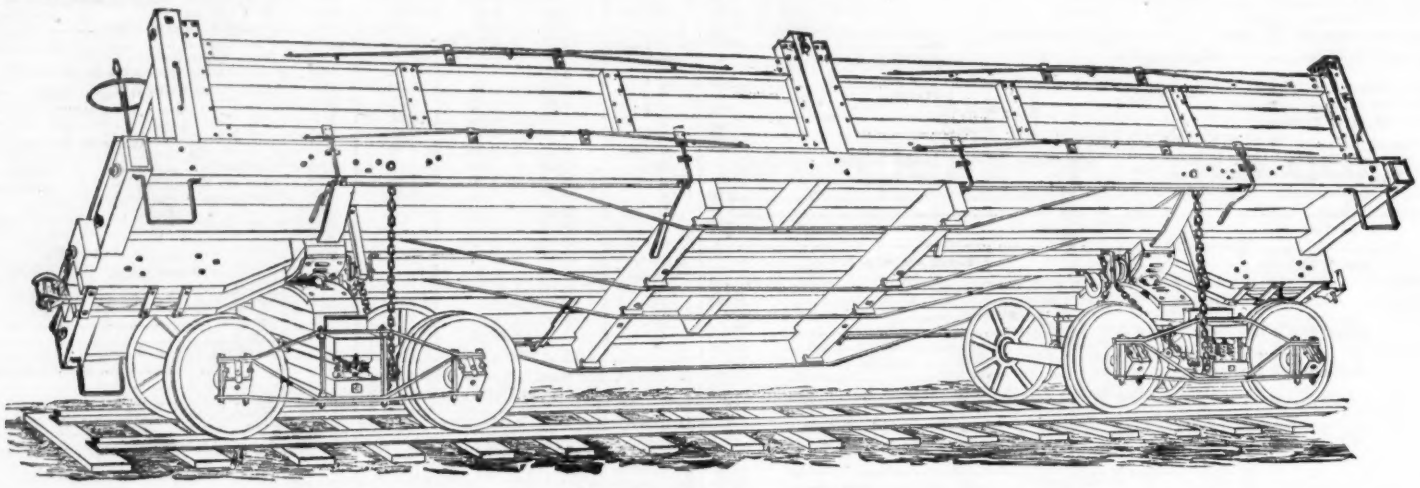
THE DEVICE CAN BE APPLIED TO FLAT CARS

THE CAR IS UNDER PERFECT CONTROL AT ALL TIMES, AND CAN BE HELD AT ANY ELEVATION OR DUMPED SUDDENLY, IF DESIRED.

For Construction Trains, cars with this device would be invaluable.

The Mechanism is Strong, Simple and Durable

The following Railroad and Car Builders are now building cars with this Screw Lever attachment: Union Pacific Railway, Omaha, Neb. Pennock Brothers, Minerva, Ohio Ontario Car and Foundry Co., London, Ontario. Australian Government. Ferd. Schumacher, Akron, Ohio. Fureka Iron Co., Oxmoor, Ala. Lehigh Valley R. R., Bethlehem Pa. Wasson Car Co., Chattanooga, Pa.



Underside View.

UNITED STATES CAR CO., 48 CONGRESS ST., BOSTON, MASS.

J. C. SCHAFFER'

Manufacturer of

HYDROSTATIC PRESSES

PORTABLE AND ADJUSTABLE

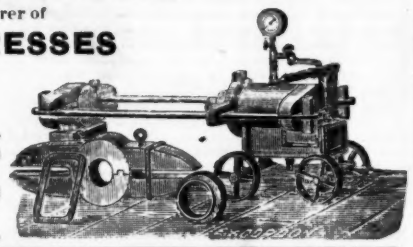
Crank Pin Presses.

Also for Pressing on or off Car wheels, and for pressing Shafts in Collars, or Sleeves for Pumps and Planer Heads. Also

Builder of Large Stationary Presses

Send for Circulars and Photographs, 9

129 Mills Street, Rochester, N. Y., U. S. A.



Corry City Iron Works,

CORRY, PA., manufacturers of all sizes of

Portable and Stationary Engines and Boilers,

and all kinds of **Plate and Sheet Iron Work.** Also manufacturers of the

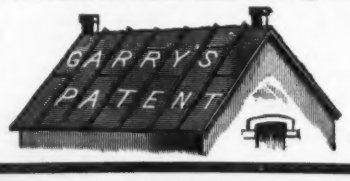
Celebrated Gladiator Agricultural Engine.

The lightest and safest engine built, having a perfect spark arrester. Send for Circular.

CARRY IRON ROOFING CO.,

The Largest Manufacturers of Iron Roofing in the World.

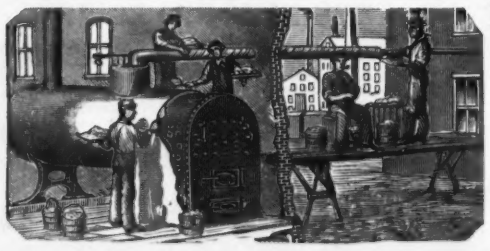
Manufacturers of
ALL KINDS OF
IRON ROOFING,
CRIMPED and CORRUGATE SIDING.
Fire-Proof Doors and Shutters,
Iron Framés for Roofs, Buildings, etc.



IRON ORE PAINT
AND CEMENT.
152 Merwin Street,
CLEVELAND, O.

Send for circulars and price list No. 19.

The Ainsworth National Boiler and Pipe Covering Co.



Have the only Wood Pulp Covering

The most durable and Effective in the Market. Being adopted by all the large concerns in the City.

For particulars address

The Ainsworth National Boiler & Pipe Covering Co.,

25 Euclid Ave.—Room 8, CLEVELAND, O.

The "Swift" AUTOMATIC LUBRICATOR,

IS THE

BEST

FOR MARINE, LOCOMOTIVE, STATIONARY AND PORTABLE ENGINES.

Address for Circularr,

ALLAN W. SWIFT,
ELMIRA, N. Y.

The Latest Thing Out.

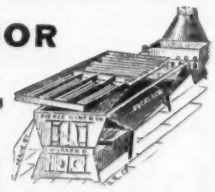
THE

EXCELSIOR

PORTABLE

Evaporating Outfit,

Combined Evaporator and Tubular Defacator.



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FOR 1885.

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THE TRIBUNE begins the new subscription year with prospects unparalleled in its history. Its circulation for the seven days ending Nov. 9th, 1884, was as follows:

Monday, November 3	99,100
Tuesday, November 4	101,500
Wednesday, November 5	188,600
Thursday, November 6	167,100
Friday, November 7	160,600
Saturday, November 8	172,000
Sunday, November 9	129,000
Weekly, November 5, exclusive of all short term campaign subscriptions	**145,910**
Semi-Weekly	**38,300**
Total number of Tribunes printed and sold during week ending November 9, exclusive of campaign subscriptions	**1,202.110**

Ninety-four tons of paper were used in printing the week's issues. This was of course an election week "spurt," which "broke the record" in New York. Settling back into its "steady gait," THE TRIBUNE'S record stood on the following week:

Average daily circulation of the Daily Tribune, for week ending Nov. 15th, 1882	**121,400**
Weekly Tribune, Nov. 12th, 1884	**142,650**
Semi-Weekly	**36,700**

During 1885 THE TRIBUNE will strive more zealously and hopefully than ever for its political faith. The return to power of the party that brought on the Rebellion must make the coming year one of the most interesting in our history. The more the people know of how Democrats deal with their Government, the surer is Republican success the next time.

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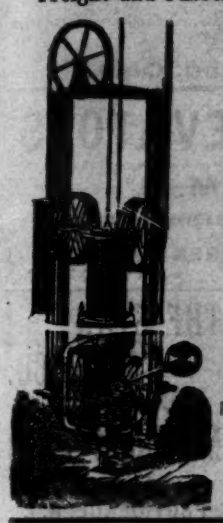
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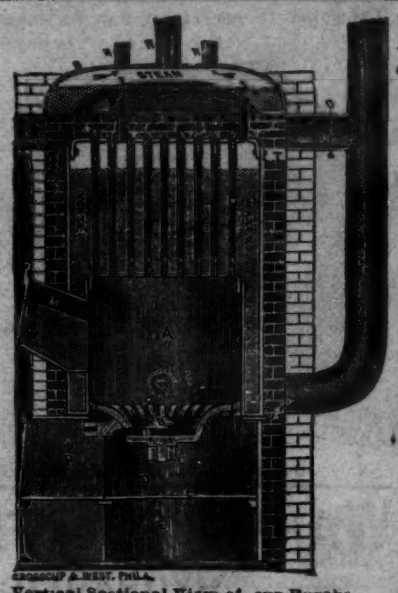
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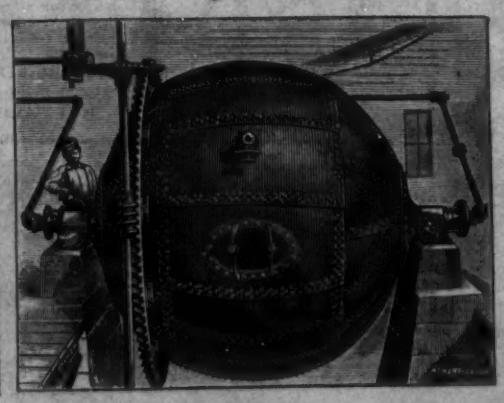
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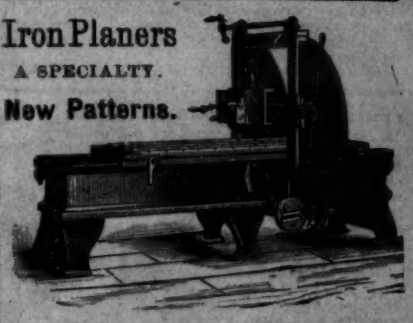
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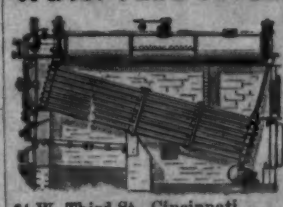
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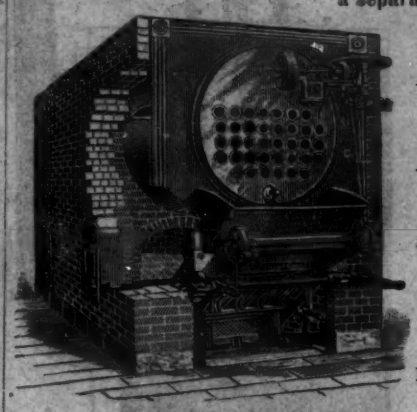

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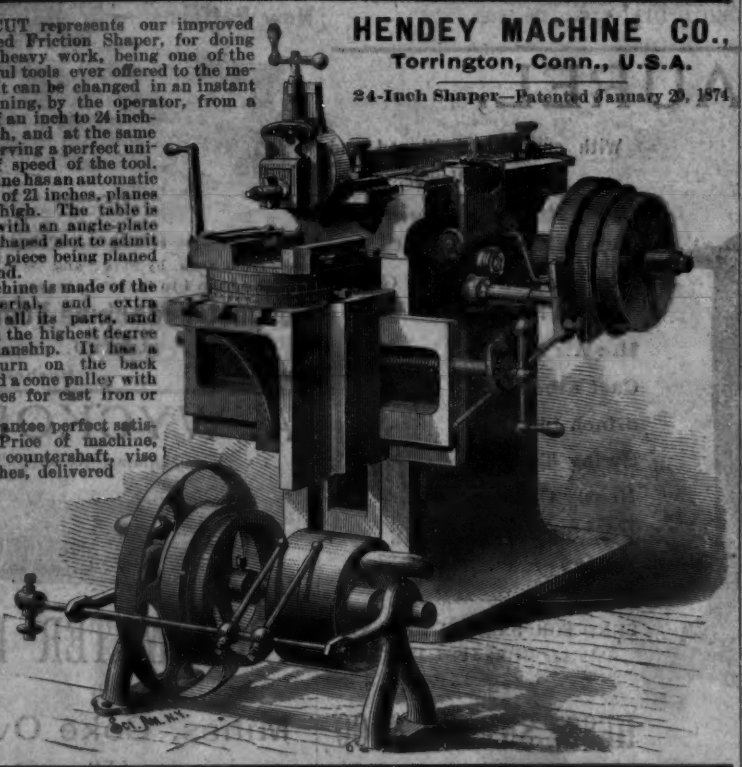

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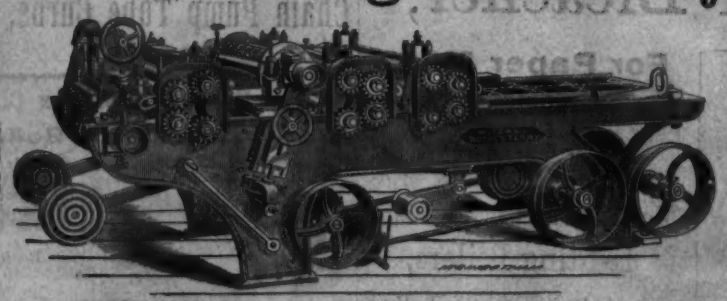

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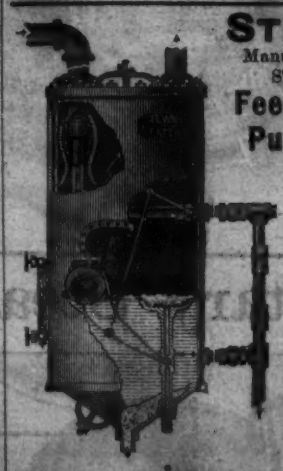

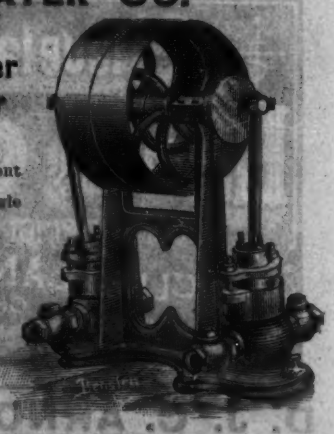

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